MINOLTA

QMS

The essentials of imaging

magicolor 2+ Service Manual

1750059-001A

PRODUCT SPECIFICATION
OF
COLOR LASER PRINTER

MODEL *SL-1D*

(600dpi, 4/16ppm, Auto duplex)

HITACHI, LTD.
TOKYO, JAPAN

April 12, 1999

SL-1 SPECIFICATION REVISION LOG

REV LEVEL	DATE OF APPROVAL	ISSUED BY	REASON OR SUBJECT OF CHANGE
0.01		HITACHI, 9/25/'98	
0.02		HITACHI, 3/6/'99	2(9)(b), 2(12), 2(14)-1(a), 2(14)-1(b), 2(14)-2(a), 2(21), 2(22), 3(1)(a), 9(3), 10(1), 10(2), 10(3), 11(2)(a), 12(1), 17(1)
1.00		HITACHI, 4/12/'99	2(4), 2(13), 2(16), 9(6)(c), 9(7), 17(1)

Comparison of US unit, EC unit, and Japanese unit

#	Title	Page	US unit	EC unit	Japanese unit
1	**Application**	7	120V, 60Hz	220-240V, 50Hz	100V, 50/60Hz
			[Add above words before "SL-1D"]		
2	**General Specification**				
	(15) Power Supply Cord	12	US type	Not Applicable	Japanese type
3	**Accessory parts**				
	(a) Media Cassette	13	Standard Media Cassette (Letter)	Standard Media Cassette (A4)	Standard Media Cassette (A4)
	(b) Power Supply Cord	13	1 pc.	None	1 pc.
5	**Power Supply Conditions**				
	(1) Input Voltage	14	120V ± 10%	220-240V ± 10%	100V ± 10%
	(2) Input Frequency	14	60 ± 2 Hz	50 ± 2 Hz	50/60 ± 2 Hz
	(4) Input Current	14	Max. 8.3A	Max. 4.5A	Max. 10.0A
	(6) Instantaneous Interruption	14	120V - 100%, 8.3 ms	220V - 100%, 10 ms	100V - 100%, 10 ms
	Note : Measurement Condition	14	120V, 60Hz	220-240V, 50Hz	100V, 50Hz
6	**Safety**				
	(2) Electric Strength (Manufacturing Line)	15	AC 1,000V, 1 min. (AC 1,250V, 3 sec.)	AC 1,500V, 1 min. (AC 1,500V, 3 sec.)	AC 1,000V, 1 min. (AC 1,250V, 3 sec.)
	(3) Leak Current	15	3.5 mA	3.5 mA (IEC950)	3.5 mA
	(4) Laser Radiation	15	CFR21,Chapter I, Subchapter J, Class I	EN60825(IEC 825), Class I	JIS C6802,Class I

	(5) Product Safety	15	UL1950/1993 Second Edition CSA-22.2 No.950-93	EN60950/1992 *1	Pursuant to UL1950 /1993 Second Edition
	(6) EMI	15	FCC 47 CFR, Chapter I, Part 15,Class B	EN55022:1987,Class B EN61000-3-2,Class B. (Harmonics;Mandatory as from 6/'98) EN61000-3-3, Class B. (Flicker; Mandatory as from 6/'98)	VCCI V-3, Class II
	(7) ESD Note : Measurement Condition	15	120V, 60Hz	220-240V, 50Hz	100V, 50Hz
	(8) Ozone	15	0.1 ppm (UL1950)	0.1 ppm (IEC950)	0.1 ppm (UL1950)
	(9) EMC	16	Not Applicable	IEC801-2, 3, 4	Not Applicable
12	**Labeling**				
	(1) Machine Label [To use appropriate label in order to designate each unit.]	23	US type	EC type	Japanese type

*1: Customer to confirm and declare the product safety according to Europe Directive 73/23/EEC and 93/68/EEC, EMC Directive 89/336/EEC, and then, indicates CE Mark on the product. Hitachi to provide necessary data on the engine for the customer to proceed with above product safety.

Table of Contents

1. Application 7
2. General Specification 7
(1) Print Method 7
(2) Print Speed 7
(3) Warming-Up Time 8
(4) First Print Time 8
(5) Resolution 9
(6) Scan Frequency 9
(7) Media Size 9
(8) Media Feed Direction 10
(9) Media Type 10
(10) Media Inputs 11
(11) Capacity of Cassette 11
(12) Output Tray Capacity 11
(13) Printable Area 11
(14) Weight of Apparatus 12
(15) Power Supply Cord 12
(16) Appearance and Dimension 12
(17) Space for Controller 12
(18) Power Supply for Controller 12
(19) Interface 12
(20) Operator Control Panel 12
(21) External Color 13
(22) External Texture 13
3. Accessory Parts 13
4. Optional Accessories 13
5. Power Supply Conditions 14
(1) Input Power Supply Voltage 14
(2) Input Power Supply Frequency 14
(3) Power Consumption * 14
(4) Input Current * 14
(5) AC Line Noise * 14
(6) Instantaneous Interruption (Half-Cycle Power Dropout) * 14
(7) In-Rush Current * 14
6. Safety 15
(1) Insulation Resistance 15
(2) Electric Strength 15
(3) Leak Current 15
(4) Laser Radiation 15
(5) Product Safety 15
(6) EMI 15
(7) Electrostatic Discharge (ESD) 15
(8) Ozone 15
(9) EMC and CE Marking (European Unit only) 16

(10) Other 17
7. Environment Condition 18
(1) Ambient Temperature / Humidity / Altitude 18
(2) Vibration Resistance 19
(3) Dust Resistance and Corrosion Resistance 19
(4) Acoustic Noise 19
(5) Inclination 19
(6) Clearance 19
8. Print Quality 20
To be specified in the Print Quality Specification. 20
9. Reliability 20
(1) Machine Life 20
(2) Life of Consumables 20
(3) Jam Rate 20
(4) Multi-Feed Rate 21
(5) [MTTR] Mean Time to Repair 21
(6) Operation Condition 21
(7) MTBF/MIBF 21
10. Packing and Transportation 21
(1) Drop Test 21
(2) Vibration Resistance 21
(3) Stacking Height 22
11. Maintenance 22
(1) Consumables 22
(2) Maintenance 22
12. Labeling 23
(1) Machine Label to indicate the following 23
(2) Serial Number Label 23
(3) Caution Labels 23
(4) Instruction Labels and Marking 23
13. Documentation 23
14. Characteristics of Hitachi Specified Paper 24
15. Hitachi Recommended Paper, Label, Transparency, and Envelope 24
16. DWG #1 (Power Supply Cord) 25
17. DWG #2 (Appearance and Dimension) 26
(1)Main Body 26

1. Application

This Specification is applicable to Hitachi Color Laser Printer Engine SL-1D, and its accessory part

2. General Specification

(1) Print Method

Semiconductor Laser and Electrophotographic (Black writing) Print.

(2) Print Speed

The printer shall process media in one of three modes: Plain Paper, Transparency and Label/Thick Stock. The only difference in the speed among these modes is that the fusing is done at reduced rate for Transparency mode and Label/Thick Stock mode.

(2)-1 Continuous 16 sheets, upper Cassette feed, Plain Paper mode(A4, Letter)

(Not applicable to the first three sheets in DUPLEX execution)

	SIMPLEX	DUPLEX
(a) Mono Color :	16 ± 0.5 sheets/min.	8 ±1 sheets/min.
(b) Two Color :	8.0 ± 0.5 sheets/min.	4 ±1 sheets/min.
(c) Three Color :	5.3 ± 0.5 sheets/min.	2.65 ± 1 sheets/min.
(d) Four Color :	4.0 ± 0.5 sheets/min.	2 ±1 sheets/min.

(2)-2 Continuous 8 sheets, upper Cassette feed, Plain Paper mode(Legal)

(Not applicable to the first three sheets in DUPLEX execution)

	SIMPLEX	DUPLEX
(a) Mono Color :	8.0 ± 0.5 sheets/min.	3.2 ± 1 sheets/min.
(b) Two Color :	8.0 ± 0.5 or 5.3 ± 0.5 sheets/min. *1	3.3 ± 1 or 2.65 ± 1 sheets/min. *2
(c) Three Color :	5.3 ± 0.5 sheets/min.	2.65 ± 1 sheets/min.
(d) Four Color :	4.0 ± 0.5 sheets/min.	2 ± 1 sheets/min.

(2)-3 Continuous 8 sheets, upper Cassette feed, Transparency mode(A4, Letter)

	SIMPLEX
(a) Mono Color(Y, M, C) :	3.0 ± 0.5 sheets/min.
Mono Color(K) :	8.0 ± 0.5 sheets/min.
(b) Two Color :	2.5 ± 0.5 sheets/min.
(c) Three Color :	2.2 ± 0.5 sheets/min.
(d) Four Color :	2.0 ± 0.5 sheets/min.

(2)-4 Continuous 8 sheets, upper Cassette feed, Label/Thick Stock mode(A4, Letter) *3

(Not applicable to the first three sheets in DUPLEX execution)

	SIMPLEX	DUPLEX(only Thick Stock mode)
(a) Mono Color :	3.0 ± 0.5 sheets/min.	1.3 ± 1 sheets/min.
(b) Two Color :	2.5 ± 0.5 sheets/min.	1.15 ± 1 sheets/min.
(c) Three Color :	2.2 ± 0.5 sheets/min.	1 ± 1 sheets/min.
(d) Four Color :	2.0 ± 0.5 sheets/min.	0.9 ± 1 sheets/min.

Note

*1 :	YK, MC	→	5.3 ± 0.5 sheets/min
	YM, YC, MK, CK	→	8.0 ± 0.5 sheets/min
*2 :	YK, MC	→	5.3 ± 0.5 sheets/min

YM, YC, MK, CK → 6.4 ± 0.5 sheets/min

*3 : Label/Thick Stock mode is the print mode for Label and Thick Stock.
DUPLEX execution can be applied to the Thick Stock mode only.

(3) Warming-Up Time

Warming-Up Time is defined as the time elapsed from when the power is turned ON to when the READY status is reached, indicated by the READY indicator light is ON. The typical value is for normal operating conditions: ambient temperature of 20°C and rated line voltage (US unit: 120V, EC unit: 240V, Japanese unit: 100V).

Case 1 Warm-up for recovery of short-time door open (up to 15 seconds) from either standby (ready or misprint) or paper unavailable operator call without warning.
Warm-up Time = 10 seconds maximum.

Case 2 Warm-up for recovery of long-time door open (15 to 60 seconds) without action to belt cartridge, or for recovery of paper jam in case that engine starts the warm-up within 60 seconds after jam declaration.
Warm-up Time = 60 seconds maximum.

Case 3 Warm-up from power on (include sleep mode).
Warm-up Time = 210 seconds maximum. (typ. 190 seconds)

(4) First Print Time

First Print Time is defined as the time elapsed from when the printer receives a PRREQ signal in the READY state to when one sheet of paper is printed and delivered into the output paper tray (i.e., the page completely clears the output feed rollers).

The printer is in DUPLEX print schedule (1), which is "side B then side A" printing mode. (Refer to 4.2(7) of Video Interface Specification.)

(4)-1 Plain Paper mode (Letter)

	SIMPLEX	DUPLEX
(a) Mono Color :	Less than or equal to 19 seconds.	Less than or equal to 34 seconds.
(b) Two Color :	Less than or equal to 23 seconds.	Less than or equal to 38 seconds.
(c) Three Color :	Less than or equal to 27 seconds.	Less than or equal to 42 seconds.
(d) Four Color :	Less than or equal to 30 seconds.	Less than or equal to 45 seconds.

(4)-2 Transparency mode (Letter)

	SIMPLEX
(a) Mono Color(Y, M, C) :	Less than or equal to 28 seconds.
Mono Color(K) :	Less than or equal to 19 seconds.
(b) Two Color :	Less than or equal to 31 seconds.
(c) Three Color :	Less than or equal to 35 seconds.
(d) Four Color :	Less than or equal to 39 seconds.

(4)-3 Label/Thick Stock mode(Letter) *1

	SIMPLEX	DUPLEX (only Thick Stock mode)
(a) Mono Color :	Less than or equal to 28 seconds.	Less than or equal to 50 seconds.

	SIMPLEX	DUPLEX (only Thick Stock mode)
(b) Two Color :	Less than or equal to 31 seconds	Less than or equal to 57 seconds.
(c) Three Color :	Less than or equal to 35 seconds.	Less than or equal to 64 seconds.
(d) Four Color :	Less than or equal to 39 seconds.	Less than or equal to 72 seconds.

Note *1 : Label/Thick Stock mode is the print mode for Label and Thick Stock.
DUPLEX execution can be applied Thick Stock mode only.

(5) Resolution

Horizontal: 600 dots/inch (dpi), Scanning Line Resolution
Vertical: 600 dots/inch (dpi), Raster Lines per inch

(6) Scan Frequency

Scan Frequency : 2393.6 Hz.

(7) Media Size

(7)-1 Cassette Feed / Standard

The printer's standard cassette input feeder shall support the following media sizes:

	Inches	mm	Note
A4	8.2×11.7	210×297	
LETTER	8.5×11	215.9×279.4	
EXECUTIVE	7.3×10.5	184×267	
B5 (JIS)	7.2×10.1	182×257	Select by "Select Cassette Type Command"
UK Quarto	8.0×10	203.2×254	
B5 (ISO)	6.9×9.8	176×250	
Commercial #10	4.1×9.5	105×241.3	Select by "Select Cassette Type Command"
International DL	4.3×8.7	110×220	

Allowable tolerance of each media size is ± 1 mm.

(7)-2 Cassette Feed / Option

The printer's optional Legal Cassette shall support the following media sizes:

	Inches	mm	Note
Legal	8.5×14	215.9×355.6	
Folio	8.5×13	215×330.2	Select by "Select Cassette Type Command"
Foolscap	8.0×13	203.2×330.2	
SP Folio	8.5×12.4	215×315	
A4	8.2×11.7	210×297	
LETTER	8.5×11	215.9×279.4	
EXECUTIVE	7.3×10.5	184×267	
B5 (JIS)	7.2×10.1	182×257	Select by "Select Cassette Type Command"
UK Quarto	8.0×10	203.2×254	
B5 (ISO)	6.9×9.8	176×250	
Commercial #10	4.1×9.5	105×241.3	Select by "Select Cassette Type Command"
International DL	4.3×8.7	110×220	

Allowable tolerance of each media size is ± 1 mm.

(8) Media Feed Direction

All media sizes are fed in the portrait orientation, that is, short edge feeding into the printer. All media shall be aligned to the center (short edge) of the paper cassette.

(9) Media Type

The following media are recommended for use in this printer:

DUPLEX execution to be applied to (a).Paper and (b).Thick Stock

DUPLEX execution to (c).Label, (d).Transparency and (e). Envelope to be out of consideration.

(a) Paper :

Paper type shall have the grain long direction.

Hitachi Specified Paper *1

Xerox 4024 *1

Hammermill Laser Print *1

Other papers suitable for plain paper laser printers *2

Paper Weight: 16 lbs(60 g/m^2) to 24 lbs (90 g/m^2)

Paper is printed in "**Plain Paper mode**".

(b)Thick Stock :

SIMPLEX; Paper Weight: 24 lbs(90 g/m^2) to 43 lbs (160 g/m^2)

DUPLEX; Paper Weight : 24 lbs(90 g/m^2) to 28 lbs (105 g/m^2)

Thick Stock is printed in "**Label/Thick Stock mode**".

(c) Label :

Avery 5260 *1

Label is printed in "**Label/Thick Stock mode**".

(d) Transparency :

3M CG3710 *1

This transparency should be imaged on non-striped side.
Be sure to feed the striped edge as trailing edge though the transparency vendor recommends that the striped edge is first into the printer.

Under the H/H environment, Hitachi recommends alternate transparency Xerox 3R3117. Because transfer error may occur on 3M CG3710.

Transparency is printed in "**Transparency mode**".

(e) Envelope :

Commercial #10 ; SPHINX *1

International DL ; Auto Fil #1914(white) *1

Envelope is printed in "**Label/Thick Stock mode**".

The envelope to be used shall be dry without any moisture absorption.

The envelope should be imaged on non-flap side.

Note *1 : For reference only, the characterization of the above recommended media is located in section 14 and 15.

Note *2 : This specifies the range of paper that can be fed, but the Print Quality Specification, jam rate, and multi-feed rate do not apply.

(10) Media Inputs

(a) One automatic upper cassette feeding, standard.
(b) One automatic lower cassette feeding, indispensable.

Note:

1. Standard Cassette and Optional Legal Cassette are interchangeable between the upper and the lower feeder.
2. Envelope shall be fed through the upper feeder only.

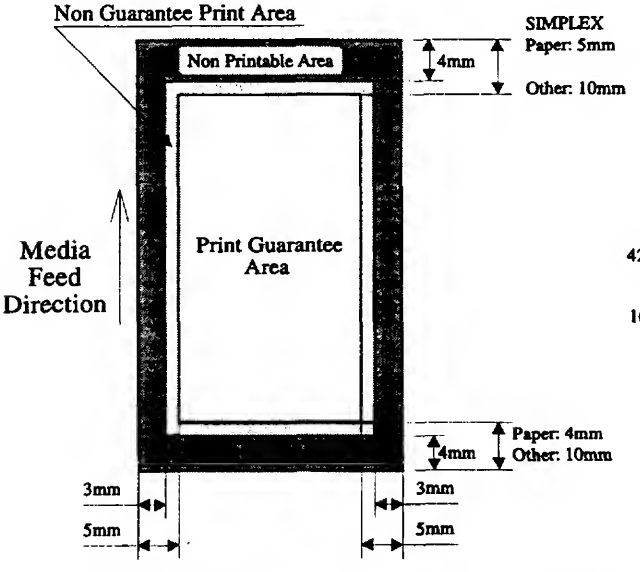
(11) Capacity of Cassette

Paper :	Maximum capacity is 26 mm loading height. This is approximately 250 sheets of 20 lbs (75g/m^2) paper.
Label :	Approximately 80 sheets/cassette.
Transparency :	Approximately 50 sheets/cassette. (Hitachi recommended Transparency)
Envelope :	Approximately 15 sheets/cassette.

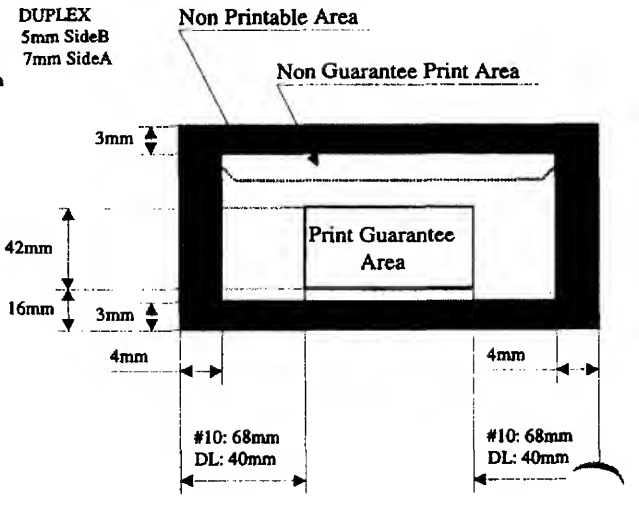
(12) Output Tray Capacity

250 sheets [20 lbs (75g/m^2)] at ambient conditions specified by Zone A, as defined in Section 7. At the SIMPLEX mode, the printer shall deliver the media printed side down (face down) in a tray located at the top of the printer.

(13) Printable Area



Printable Area (Paper, Thick Stock, Label, Transparency)



Printable Area (Envelope)

(14) Weight of Apparatus

(14)-1 Weight of Apparatus without Package

(a) Excluding consumables Approximately 42 kg (93 lbs)

(b) Including consumables* Approximately 48 kg (106 lbs)

Note *: Consumables are defined as:

Belt Cartridge	: Approx. 1.3 kg (2.9 lbs)
Toner Cartridge (Y, M, C, K)	: Approx. 3.8 kg (8.5 lbs)
Fuser Oil Bottle	: Approx. 0.3 kg (0.6 lbs)
Fuser Cleaning Roller	: Approx. 0.1 kg (0.3 lbs)
Waste Toner Pack	: Approx. 0.04 kg (0.1 lbs)

(14)-2 Weight of Packed Apparatus

(a) Packed Engine including Consumables** :Approx. 55 kg (121 lbs)

**Note: Consumables are Belt Cartridge, Toner Cartridge (Y, M, C, K) Fuser Oil Bottle, Fuser Cleaning Roller and Waste Toner Pack.

(15) Power Supply Cord

2.5 m (8.2 feet). [As per DWG #1 of section 16.]

(16) Appearance and Dimension

(16)-1 Main Body

500(W)×570(D)×547(H) mm. [19.7(W)×22.4(D)×21.5(H) inch].

[As per DWG #2 of section 17.]

(17) Space for Controller

52(D)×220(H)×282(W) mm.

[2.0(D)×8.7(H)×11.1(W) inch].

(18) Power Supply for Controller

The printer shall supply the customer controller with 5V DC at 6A.

(19) Interface

Interface to be specified in Video Interface Specification.

(20) Operator Control Panel

The operator control panel shall consist of a two line 16 character LCD, switches and LEDs. The operator control panel is under the control of the customer controller.

(21) External Color

The following specifies the color of the printer:

Main body	SANDSTONE SUPER LIGHT (8.0 GY 8.0/0.3)
Highlighted areas	GRAY STONE MEDIUM (9.7B 5.9/0.5)

The color values shall be defined by the agreed-to color chip samples.

The highlighted areas are user access levers (front cover, top cover and transfer unit), printer base cover, paper cassette, D-main cover, D-bottom cover, D-main frame, and lower feeder for duplex.

(22) External Texture

The following lists the external texture of the printer:

Main Body	TANASAWA TH-113
Highlighted Areas	TANASAWA TH-113

The external texture shall be defined by the agreed-to texture sample.

The highlighted areas are printer base cover, paper cassette, D-main cover, D-bottom cover, D-main frame, and lower feeder for duplex.

3. Accessory Parts

(1) Accessory Parts installed in the printer

(a) Standard Media Cassette	2 pc.
(b) Waste Toner Pack	1 pc.
(c) OPC Charge Wire Cleaner	1 pc.

(2) Starter kit

(a) Belt Cartridge	1 pc.
(b) Toner Cartridge *(Black, Yellow, Magenta, Cyan)	1 pc. each.
* Half content of STD.	
(c) Fuser Oil Bottle and Cleaning Roller	1 pc. each
(d) Fuser Oil Drain Syringe	1 pc.

(3) Accessory kit

(a) Power Supply Cord	1 pc.

4. Optional Accessories

(a) Legal Media Cassette

Weight:	Approximately 1.1 kg	(2.4 lbs)
Packed Weight:	Approximately 1.6 kg	(3.5 lbs)

5. Power Supply Conditions

(1) Input Power Supply Voltage

Single Phase 120V ± 10%

Printer operation, operator control panel and print quality shall meet their specifications when the line voltage is within ± 10% of the rated voltage.

(2) Input Power Supply Frequency

60 ± 2 Hz

Printer operation, operator control panel and print quality shall meet their specifications when the line frequency varies ± 2 Hz from the rated frequency.

(3) Power Consumption *

Standby	Max. 1,000W Ave. 150W (reference value)
Operation	Max. 1,000W Ave. 450W (reference value)
Sleep mode	Max. 25W (Engine only)

(4) Input Current *

Standby	Max. 8.3A Ave. 1.3A (reference value)
Operation	Max. 8.3A Ave. 3.8A (reference value)

(5) AC Line Noise *

When AC line noise pulses are applied in the Warming-Up, READY (Standby) and PRINT modes, all printer operations, operator control panel and print quality shall be normal. The AC line noise pulse shall meet the specification of the fast transients shown in table 6-4.

(6) Instantaneous Interruption (Half-Cycle Power Dropout) *

When the printer is operating at 10% below the rated voltage and there is a 100% power interruption to the printer for 8.3 ms (i.e., 1/2 cycle at 60 Hz), all printer operation and operator control panel shall be normal. Poor print quality may occur for several sheets after the power interruption.

(7) In-Rush Current *

In-rush current shall not exceed 25A (R.M.S.) when the power switch of the printer is turned ON.

Note *: Measurement conditions for the items asterisked (*) above are as follows :

Voltage to be 120 V, Frequency to be 60 Hz,
Without power supply for controller.

6. Safety

(1) Insulation Resistance

Not less than 10MΩ (measuring voltage DC 500V).
No damage to be caused in case the voltage is applied.

(2) Electric Strength

AC 1,000V, 1 minute. (AC 1,250V, 3 seconds in Manufacturing Line)

(3) Leak Current

3.5 mA at maximum according to Product Safety Standard.

(4) Laser Radiation

The printer shall be certified to meet the Title 21, Code of Federal Regulations (CFR), Chapter I, Subpart J, Safety Specifications for Class 1 Laser Products.

(5) Product Safety

The printer shall be certified to meet the Safety Specification UL1950/1993, Second Edition. Also, the printer shall be certified to meet the Safety Specification CSA 22.2 No. 950-93.

(6) EMI

The printer shall comply with FCC Title 47, Code of Federal Regulations (CFR), Part 15, Subpart B, Class B requirements for both conducted and radiated emissions. The printer shall also comply with Canadian EMI specification DOC CRC, C1374, Class B.

Hitachi shall submit reference data of print engine (without customer controller) printing test pattern using Hitachi's unique simulator.

Customer shall obtain the certification incorporating the print engine into customer's print system (i.e., with customer controller).

(7) Electrostatic Discharge (ESD)

Engine for USA and Japan shall meet the specification of ESD shown in the Table 6-4 of Item (9) below, while the printer is printing the Test Pattern A/H under following test conditions.

Test conditions are as follows:
Voltage to be 120 V, Frequency to be 60 Hz,
Room temperature to be 17.5 ~ 27°C,
Room humidity to be 50 ~ 70% RH.

(8) Ozone

(a) Operator Manual shall set out the protective measures against ozone.

(b) The maximum level of Ozone emitted by the printer shall not exceed 0.1 ppm (0.2 mg/m^3) calculated as an 8 hours time-weighted average concentration as defined in UL1950/1993 Second Edition.

(9) EMC and CE Marking (European Unit only)

Printer System for Europe must be confirmed to comply with the following EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC, 93/68/EEC, and then must bear CE Marking.

Hitachi shall confirm that Hitachi's printer engine without customer's controller comply with Europe Directive, and then report it to the customer.

Customer shall make the final evaluation on the printer as a system, and then indicate the CE Marking.

(a). Applicable EMC Directive 89/336/EEC: EN50082-1 "Generic Immunity Standard"

(a)-1. IEC 801-2: Electrostatic Discharge (ESD)

(a)-2. IEC 801-3: Radiated Field Immunity

(a)-3. IEC 801-4: Fast Transients

Table 6-4

No.	Test Items	Test Conditions		Judgment Criteria
(1)	ESD	Direct Discharge; 6kV	Air Discharge; 8kV	No problem if error is engine-self recoverable.
(2)	Radiated Field Immunity.	3V/m		Normal operation
(3)	Fast Transients	Power Cable; 1kV	Data Line Cable; 0.5kV	No problem if error is engine-self recoverable.

(b). Response to New Standard

New Generic Immunity Standard shown in Table 6-5 is now in the process of examination by CENELEC and will be determined in the near future. There will be talk between Hitachi and respective customers how to respond to this new standard after it is finalized.

Table 6-5: New Standard

Name of Standard	Description
EN55024	This is the CISPR24-based standard proposed by EC incorporating the following IEC standards.
IEC 1000-4-2	Electrostatic Discharge (ESD)
IEC 1000-4-3	Radiated Field Immunity
IEC 1000-4-4	Fast Transients
IEC 1000-4-5	Surge
IEC 1000-4-6	Conductive Transmission Interference
IEC 1000-4-8	Magnetic Field Frequency of Power Supply
IEC 1000-4-11	Voltage Dip, Instantaneous Interruption

(c). CE Marking for Low Voltage Directive shall be pursuant to (5) Product Safety.

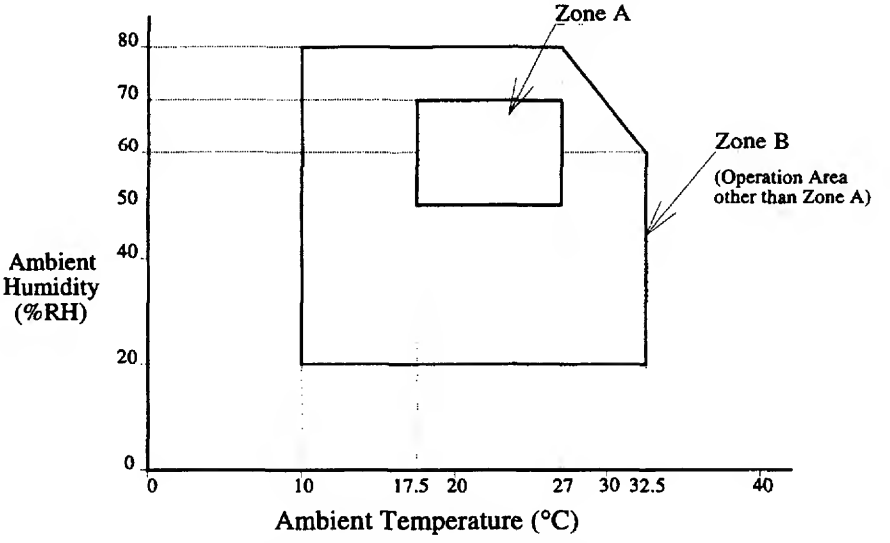
(10) Other

Customer to be responsible for obtaining the required FCC and any other authorizations and approvals, and for properly labeling and identifying the product as may be required by the laws of the countries in which the product is sold.

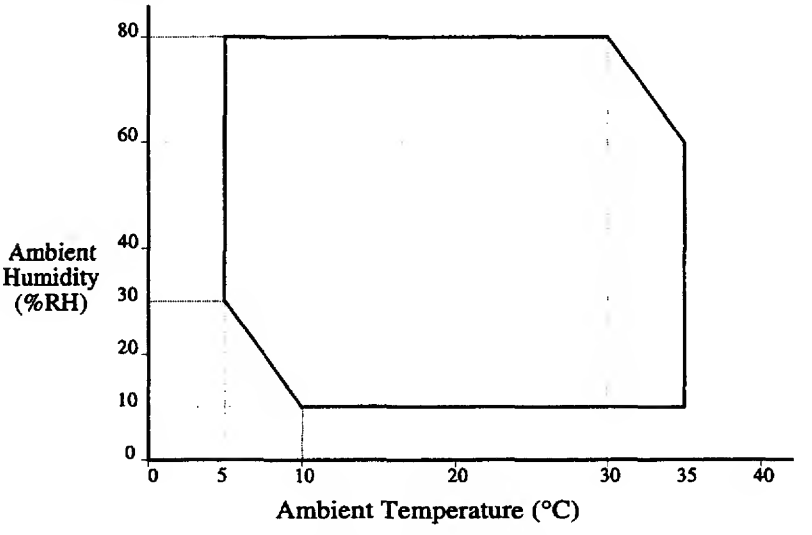
7. Environment Condition

(1) Ambient Temperature / Humidity / Altitude

(a) Operational 10 ~ 32.5°C[50 ~ 90.5°F] / 20 ~ 80% RH (Refer to figure below)



(b) Non-Operational 5 ~ 35°C[41 ~ 95°F] / 10 ~ 80% RH (Refer to figure below)



(c) Storage and Transportation Environment - Printer

The storage and transportation environment for the printer with starter kit inside specified packaging shall be:

Temperature	Normal[1]		0°C to 35°C (32 ~ 95°F)
	Severe[2]	High	35°C to 50°C (95 ~ 122°F)
		Low	-10°C to 0°C (14 ~ 32°F)
Humidity	10% to 90% RH		
Period of Storage	1 year after Ex-Taga Works		
Others	No Condensation		
Atmospheric Pressure	460 to 800 mm Hg		

The Period under "severe" shall not be deemed to be continuous, but rather a total of such intermittent periods (48 hours at most).

Note: 1 : More than 90% of entire storage period.
2 : Less than 10% of entire storage period.

Note: Storage and Transportation conditions for belt cartridge and toner cartridge shall be pursuant to Consumables Specification.

(d) Altitude

Operational : 0 to 2,500m

(2) Vibration Resistance

Operational 0.25 G (Frequency 10 ~ 100 Hz, 10 seconds)
The print quality is out of Specification.

Standby 0.25 G (Frequency 10 ~ 100 Hz, 5 minutes)

Note : In the test above, recoverable error by operator's retry and deterioration of print quality are out of Specification.

(3) Dust Resistance and Corrosion Resistance

The printer shall resist dust and corrosion in a normal office environment.

(4) Acoustic Noise

The acoustic noise level of the printer shall not exceed the following.

Standby	Less than or equal to 48 dB(A)
Operational	Less than or equal to 55 dB(A)

The maximum sound level during operation shall not exceed 65 dB(A).

Measurement Conditions:

Noise to be measured at 1 meter away from the external cover to the printer in the anechoic room (per ISO 7779).

Noise to be measured in the SLOW range by the tester.

(5) Inclination

During operation, all printer operations shall be normal if the unit is inclined less than or equal to 1.5 degrees from level (reference top cover of paper exit unit).

(6) Clearance

The following minimum clearances must be maintained when installing the printer.

Printer Side	Clearance (Reference Value)
Left Side	10 cm (4 inches)
Right Side	50 cm (20 inches)
Front	70 cm (28 inches)
Rear	70 cm (28 inches)

8. Print Quality

To be specified in the Print Quality Specification.

9. Reliability

Unless otherwise specified, all reliability specifications are based upon the following conditions:

Paper: Hitachi specified paper, A4 or letter, sealed brand new paper.
Cassette feed, Continuous print mode, coverage of 5% each color.
Print duty: monochrome (50%) / four color (50%) under the operation condition that is defined in Section 9 (6) Operation Condition.

Printing operation other than specified above may cause deterioration on printer performance (life, print quality, etc.).

(1) Machine Life

For monochrome printing, the printer's life shall be five (5) years, or 300k sheets, whichever comes first. For color printing, the printer's life shall be five (5) years, or 300k color planes, whichever comes first. The minimum product life shall be 75,000 sheets.

The printer's life shall be guaranteed provided that the specified preventive maintenance has been implemented during normal use (standard operation conditions).

Note: Preventive maintenance is defined in Section 11 Maintenance.

The printer's life is reduced when printing media except for paper are used.

(2) Life of Consumables

Refer to Consumables Specification.

(3) Jam Rate

Jam Rate including Misfeed , Inner Jam , and Outer Jam shall not exceed the values in the following table. Specified preventive maintenance (see Section 11 Maintenance) has been performed.

Environment	Jam Rate		
	Hitachi Paper		3M CG3710 Transparency
	SIMPLEX	DUPLEX	
Zone A	1/2000	1/1000	1/300
Zone B	1/1000	1/500	1/150

Note: Refer to Section 14 for details of paper characteristics and Section 15 for transparency characteristics.

(4) Multi-Feed Rate

The multi-feed rate is defined as the condition when two or more sheets are fed at the same time without causing a paper jam. The multi-feed rates shall not exceed the values in the following table:

Environment	Multi-Feed Rate	
	Hitachi Paper	3M CG3710 Transparency
Zone A	1/2,000	1/300
Zone B	1/1,000	1/150

Note: Refer to Section 14 for details of paper characteristics and Section 15 for transparency characteristics.

(5) [MTTR] Mean Time to Repair

The mean time to repair the printer shall be 0.5 hour or less.

(6) Operation Condition

(a) The standard operation condition of the printer is defined as 250 pages/day (LETTER or A4) for monochrome, or 62 pages/day (LETTER or A4) for four color. This corresponds to approximately 5,000 pages/month (LETTER or A4) for monochrome, or 1250 pages/month (LETTER or A4) for four color.

(b) The maximum operation condition of the printer is defined as 3X standard condition for 300k images.

(c) The print volume ratio between SIMPLEX print and DUPLEX print is 50/50.

(7) MTBF/MIBF

[Mean Time Between Failures* / Mean Images (Color Planes) Between Failures*]

4,500 hours / 112,500 color planes (A4 or letter size).

*Note: Excluding image defects.

10. Packing and Transportation

(1) Drop Test

The print engine assembly when packed in its standard shipping carton will not sustain Damage when dropped onto any of the following corners or face of the container.

One drop per each condition is allowed, totaling a maximum of 5 drops per engine.

(a) Four corners of bottom face, E=45.7 cm

(b) Bottom face, E=45.7 cm

E : Testing Elevation

(2) Vibration Resistance

1.0 G, 10 ~ 100 Hz, Total 60 minutes(Z direction)

(3) Stacking Height

Layers Limit : 4

11. Maintenance

(1) Consumables

- Set media in cassette when cassette is empty.
- Replace toner cartridges (Black, Yellow, Magenta, Cyan).
- Replace fuser cleaning roller and oil bottle.
- Replace waste toner pack.

(2) Maintenance

Timing and items of the periodical maintenance are as follows :

(a) Checking and Cleaning (User Maintenance)

Minimum routine user maintenance (When user wants to make an improvement in the print quality.)

<1> OPC charge wire
Example case will be provided in the manual.

Every 20,000 pages or 12 months (whichever comes earlier.)

<1> Checking & cleaning of paper guides (Engine, DUPLEX).

<2> Checking & cleaning of rollers.
(Registration Roller, Paper Exit Roller, DUPLEX roller)

<3> Checking & cleaning of printer inside.

(b) Periodical Replacement Parts (User Maintenance)

Coverage of 5% each color: <1> ~ <2>

<1> Belt Cartridge (With charger unit)
50,000 color planes or 12 months, whichever comes first.

<2> Ozone Filter
12 months.

(c) Other Replaceable Parts (Service Maintenance) , at SIMPLEX execution.

Coverage of 5% each color: <1> ~ <6>

<1> Fusing Unit (User may maintain)
60,000 pages, Hitachi specified paper.

<2> Paper Discharger (User may maintain)
120,000 pages.

<3> Drum Cleaner (User may maintain)
120,000 pages.

<4> Transfer Roller (User may maintain)
120,000 pages.

<5> Transfer Drum
300,000 color planes.

<6> Paper Pick-up Roller
120,000 pages.

12. Labeling

(1) Machine Label to indicate the following

Hitachi's rating plate(s) shall be attached to the rear of the print engine with the appropriate agency markings. A drawing of the rating plate(s) showing the physical dimensions and placement on the print engine shall be provided to customer. The rating plate(s) shall indicate the following:

- Rating Plate
- Manufacturer
- Model
- Regulatories Approvals
- Voltage
- Frequency
- Input Current
- Serial Number
- CDRH Label

(2) Serial Number Label

A label with Hitachi's engine serial number shall be affixed to the printer at a location to be determined.

(3) Caution Labels

Caution labels shall indicate dangerous areas such as high voltage, high temperature, and laser radiation.

(4) Instruction Labels and Marking

- Belt cartridge installation.
- Fuser oil bottle and cleaning roller installation.
- Jam recovery.

13. Documentation

- Prior to the shipment of the first lot, Hitachi will submit 2 copies of the following documents required for the customer approval.
- 1 copy out of 2 submissions shall be returned to Hitachi after customer approval.
  - (a) Product Specification (This Document)
  - (b) Video Interface Specification
  - (c) Print Quality Specification
  - (d) Consumables Specification

14. Characteristics of Hitachi Specified Paper

Item	Hitachi Specified Paper
Basis Weight (g/m^2)	82 ± 5
Caliper (μm)	95 ± 6
Bekk Smoothness (sec)	90 ±20
Stiffness (Clark Method)	100 ±15
Brightness (%)	85 ± 2
Surface Resistance(Ω)	10^{10} ~ 10^{11}
Grain Direction	Long

Measurement Condition : 17.5 ~ 27 °C, 50 ~ 70% RH.

Note 1: Paper should be kept in packaged condition, unopened, until ready for use

15. Hitachi Recommended Paper, Label, Transparency, and Envelope

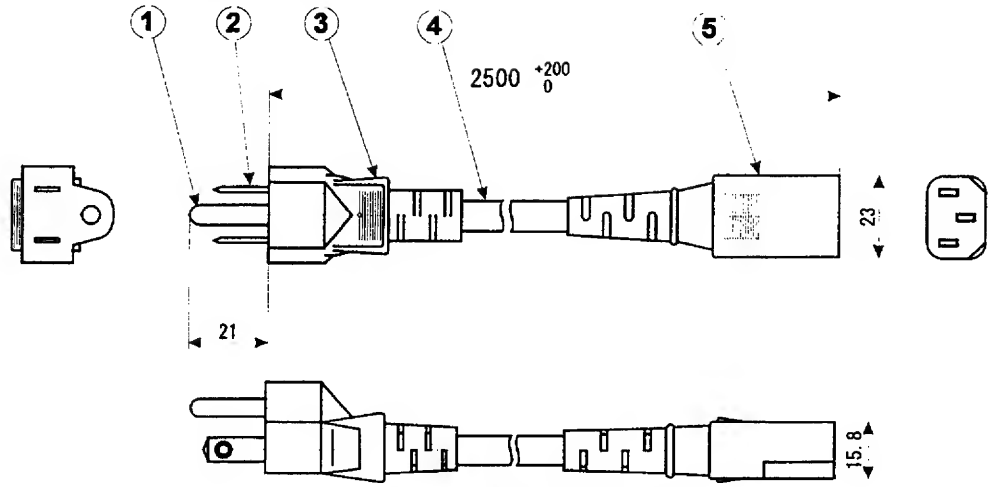
Item		Paper		Label	Transparency	Envelope
		Xerox 4024	Hammermill Laserprint	Avery 5260	3M CG3710	SPHINX Auto Fil #1914
Weight(g/m^2)		75 ± 4	90 ± 4	163 ± 7	-	90 ± 4
Caliper(μm)		102 ± 6	105 ± 6	184 ± 7	99 ± 10	125 ± 10
Smoothness(Second)		35 ± 4	120 ± 20	20 ± 6	500 ± 5 *1	22 ± 10
Stiffness(Clark Method)		100 ± 15	90 ± 15	65 ± 15	73 ± 15	70 ± 20
Surface resistivity×10^9 (Ω)		10 ~ 100	10 ~ 100	1 ~ 100	0.1 ~ 100 *1	1 ~ 100
CIE LAB L*a*b*	L*	94 ± 2	94 ± 2	93 ± 2	≥ 80 %	-
	a*	0.4 ± 1	-0.5 ± 1	-0.2 ± 1		
	b*	1.6 ± 1	2.2 ± 1	4.5 ± 1		
Brightness (%)(Hunter Method)		80 ± 2	85 ± 2	77 ± 3	-	82 ± 5
Grain Direction		Long	Long	Long	-	-

*1 : Printed Side

Measurement Condition : RT 17.5 ~ 27°C, RH 50 ~ 70%.

Above values are reference only.

16. DWG #1 (Power Supply Cord)

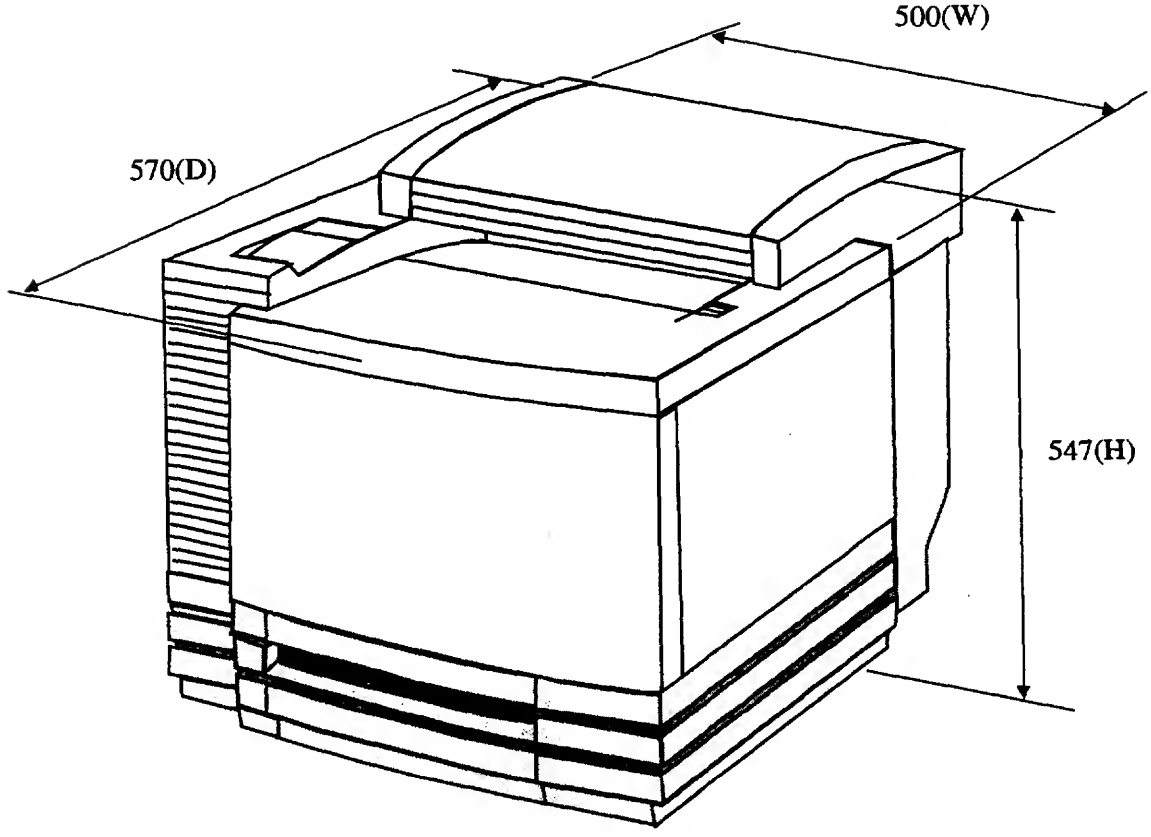


(This drawing is for reference.)

① Earth Terminal	Standards
② Blade	Cord : UL62, CSA C22.2 No.49
③ P.V.C. Mold Plug	Plug, Connector : UL498, 817
④ P.V.C. Cord	CSA C22.2 No.42,21
⑤ P.V.C. Mold Connector	

17. DWG #2 (Appearance and Dimension)

(1)Main Body



HITACHI CONFIDENTIAL

MANUAL NO. : S2

Maintenance Manual

Hitachi Color Laser Printer
Duplex Print Machine Version

Model SL1D

This Maintenance Manual covers mainly the maintenance of duplex printing unit. Maintenance manual of Hitachi color laser Model SL1 is available for the maintenance of printing uint of this duplex print machine.

Hitachi, Ltd.

Office Information Products Division

March 1999

Important: Prior to starting the maintenance work for this printer, peruse and understand the safety precaution items of this Manual and also the maintenance manual of Hitachi color laser printer model SL1.

Keep this manual always available at your hand.

FCC Notice

⚠ WARNING

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are specified to provide the reasonable protection against harmful interference in a residential installation.

Since this equipment generates, uses, and radiates the radio frequency, it may cause harmful interference to the radio communications if not installed or used in accordance with the instructions set out hereunder. However, there is no guarantee that such interference will not occur in a particular installation.

If this equipment causes harmful interference to the radio or television reception, which can be checked and confirmed by powering the equipment off and on, the users are encouraged to correct the interference by taking one or more of the following counter-measures:

①. Reorient or relocate the receiving antenna.
②. Give more clearance between the equipment and receiver.
③. Connect the equipment into the outlet of other circuit which is different from the one being used for the receiver.
④. Consult the dealer or experienced radio/television technician for help.

Canadian Compliance

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

"Le presnt appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques (de la Class A) prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada."

Product Safety

Laser Product

SL1 is certified as a Class A laser product and complies with DHHS Laser-Radiation Standards, 21 CFR Chapter 1, Subchapter J.

⚠ Caution

Use of controls, adjustments or performances of procedures other than those specified in this Manual may result in hazardous radiation exposure.

Ozone Gas

⚠ Caution

SL1 is provided with the ozone filter in order to reduce exhausted ozone in compliance with Product Safety Standards. Ozone filter must be replaced with new filter yearly, otherwise, it may cause strong odor which will likely have ill effects to bronchial tubes. Therefore, this periodical replacement with new filter must be strictly respected.

Documentation Disclaimer

HITACHI, LTD. MAKES NO REPRESENTATION OR WARRANTIES OF ANY KIND WHATSOEVER WITH RESPECT TO THE CONTENTS HEREOF AND SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

SAFETY INSTRUCTIONS

1. Safety Instructions

1.1 Safety Principle

(1). Before starting your operation, read this Manual thoroughly. Especially, read the safety instructions of this section carefully and understand the contents.

(2). Perform all the operations by following the procedures described in this Manual. Follow all the cautions and warnings set out in the procedures and on safety labels affixed on the machine. Failure to do so may result in the human injuries or equipment damages.

(3). Perform only the procedures explained in this Manual. Refrain from opening or touching any portions that are not related with your operation.

(4). Repair and replacement of parts should be performed by trained and qualified persons only. Operator should not attempt to do such repair or replacement works.

(5). It must be appreciated that above-mentioned cautions and warnings do not cover everything, because it is impossible to guess or evaluate all the circumstances beforehand.

1.2 Special Safety Information

(1). Introductory Information

The cautions and warnings are made clear by following the "Safety Alert Symbol" or "Signal Words" such as DANGER, WARNING and CAUTION.

①. Safety Alert Symbol

This is the safety alert symbol. When you find this symbol placed on your equipments or marked in this Manual, be alert for the potential of human injuries. Follow the recommended precautions and safety operation practices.

(1). Introductory Information (..... continue)

②. Understanding Signal Words

DANGER is used to indicate the presence of a hazard which will cause severe human injuries or fatal accident if the warning is ignored.

WARNING is used to indicate the presence of a hazard or unsafe practices which may cause severe human injuries or fatal accident if the warning is ignored.

CAUTION is used to indicate the presence of a hazard or unsafe practices which may cause minor human injuries if the warning is ignored.
CAUTION also calls attention to safety messages in this Manual.

③. Follow Safety Instructions

Carefully read all the safety messages set out in this Manual and also in the safety signs placed on your equipments. In this Manual, the safety instructions (safety alert symbols and signal words) are bracketed by rectangular enclosure to call for attention. Keep the safety signs in good condition without missing or damage. Replace the safety signs if smeared or damaged. Learn how to operate the equipment and how to use the control properly. Do not let anyone operate without acknowledging the instructions. Keep the equipments in proper working condition. Unauthorized modification to equipments may impair the function & safety, and affect the life of equipments.

Listed below is the various kind of "WARNING" contained in this Manual.

⚠ WARNING

HAZARDOUS VOLTAGE

It may cause serious injuries or fatal accidents. Voltage is now applied from the power supply of printer. There is the danger of electrical shock if you touch the active area inside the printer.

Make sure to turn the power supply switch OFF and pull out the plug from the outlet before starting maintenance work to printer.

③. Follow Safety Instructions (.... continue)

⚠ WARNING

HARMFUL OZONE GAS

Inhalation of excessive amount of ozone gas may adversely affect the respiratory organs.

Ozone Filter is provided to this printer to reduce the exhausted ozone. This filter must be replaced with new filter periodically in accordance with the Manual attached to this printer.

Listed below are the various kinds of "CAUTION" contained in this Manual.

Hot surface. Avoid contact.	Heiße oberfläche. Bei beseitigung.	Surface chaude. Eviter tout contact.	火傷の恐れがあります。 触れないでください。 ②

HOT SURFACE

Can cause a burn.

Fusing Unit is approx.160 °C hot , so that perimeter is also very hot.

When you need to change the cleaning pad or remove jammed papers, wait about 20 minutes after opening up the paper exit unit and confirm the unit to be well cooled down.

⚠ CAUTION

ROTATING PARTS

Be cautioned about the potential danger of various rollers to get your fingers or hand caught into the machine and cause serious injuries. Note that the exit roller ejecting printed papers is rotating while printing.

Be careful not to get your hairs, fingers, hands, and sleeve or necktie caught in the machine while operating the machine.

⚠ CAUTION

HAZARDOUS POWDER

Toner is fine powder to cause powder explosion if dumped into the fire. Strictly refrain from dumping toner into the fire for disposal.

⚠ CAUTION

HAZARDOUS POWDER

Toner is fine powder to cause troubles to eyes and respiratory organs if inhaled.

Handle carefully toner cartridge, waste toner pack and developing unit not to spread the toner.

⚠ CAUTION

POWER CORDS & PLUGS

This printer is equipped with 3-wire power cords and 3-pronged plugs (bi-polar plug with grounding) for the user's safety.

Use these power cords in conjunction with properly grounded electrical receptacles to avoid an electrical shock.

⚠ CAUTION

SAFETY INTERLOCK

Cover and Paper Delivery Unit of this printer have electrical safety interlocks to turn the power off whenever they are opened. Do not attempt to circumvent these safety interlocks.

Table of Contents

1. Outline of Product
2. Product Specification
3. Installation
4. Structure of Each Part
5. Periodic Maintenance
6. Operation & Adjustment of Operator Panel
7. Replacement Procedures of Maintenance Parts
8. Troubleshooting
9. List of Spare Parts

1. Outline of Product

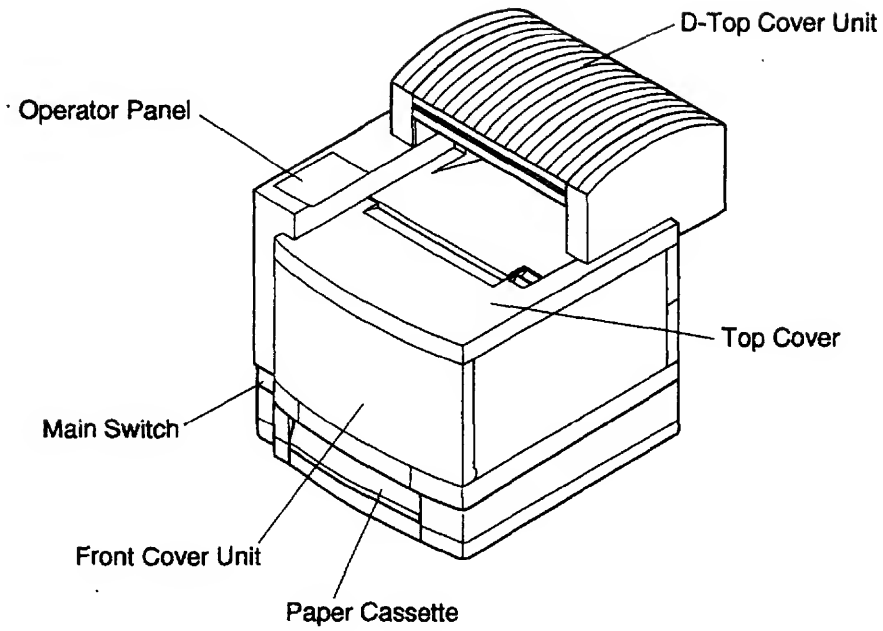
1.1 Name & Function of Each Parts 1-1

1.2 Internal Structure 1-3

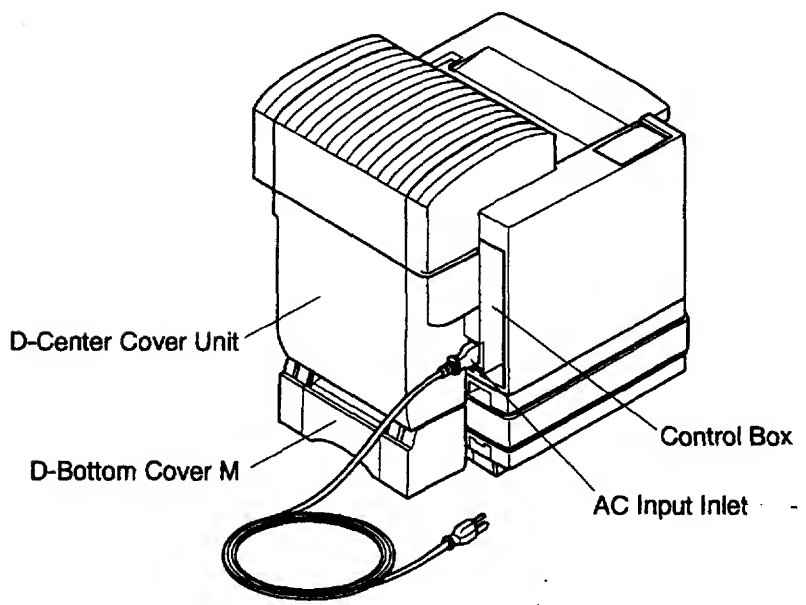
1.3 Description of Operator Panel 1-5

1. Outline of Product

1.1 Name & Function of Each Parts



[Front Face]

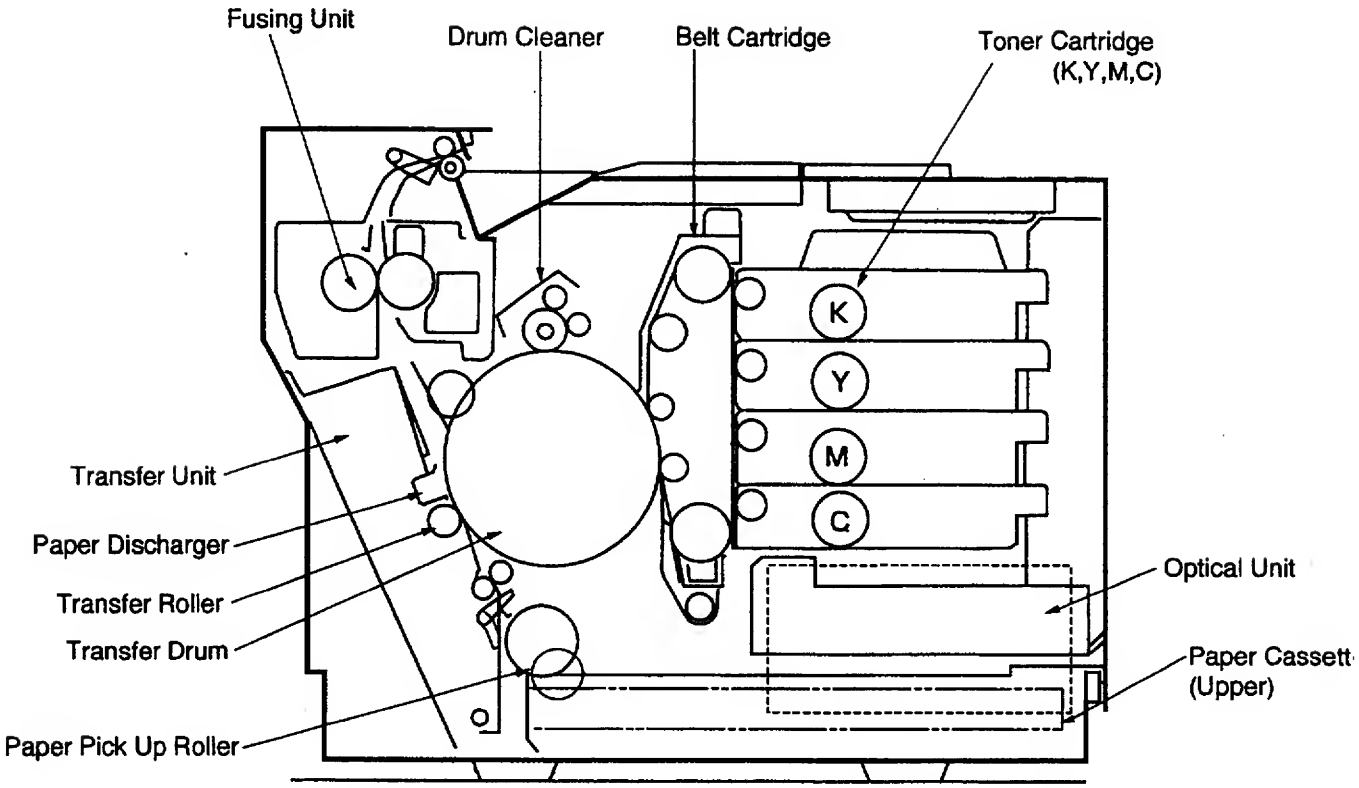


[Back Face]

No.	Name of Parts	Outline of Functions
1	Top Cover	To act as an upper enclosure and also a paper tray for printed papers.
2	Operator Panel	To display a status of printer operation and motion.
3	Front Cover Unit	To act as a front enclosure, and to be opened when replacing a toner cartridge or waste toner pack.
4	D-Top Cover Unit	Paper Transport Unit to enable the duplex printing by switching back the one-sided print paper. D-Top Cover to be opened for clearance of paper jam or maintenance work.
5	Main Switch	To operate power-on and off of printer. (Pushing for On/Off operation)
6	AC Input Inlet	To connect a power supply cable.
7	D-Center Cover Unit	Paper transportation unit for duplex printing. D-center cover can be opened at paper jam or maintenance work.
8	Control Box	Space where a controller PWB to be installed.
9	Paper Cassette	Cassette to accommodate the print papers.
10	D-Bottom Cover M	Paper Feed Guide for the duplex printing; This guide can be pulled out for clearance of paper jam or maintenance work.

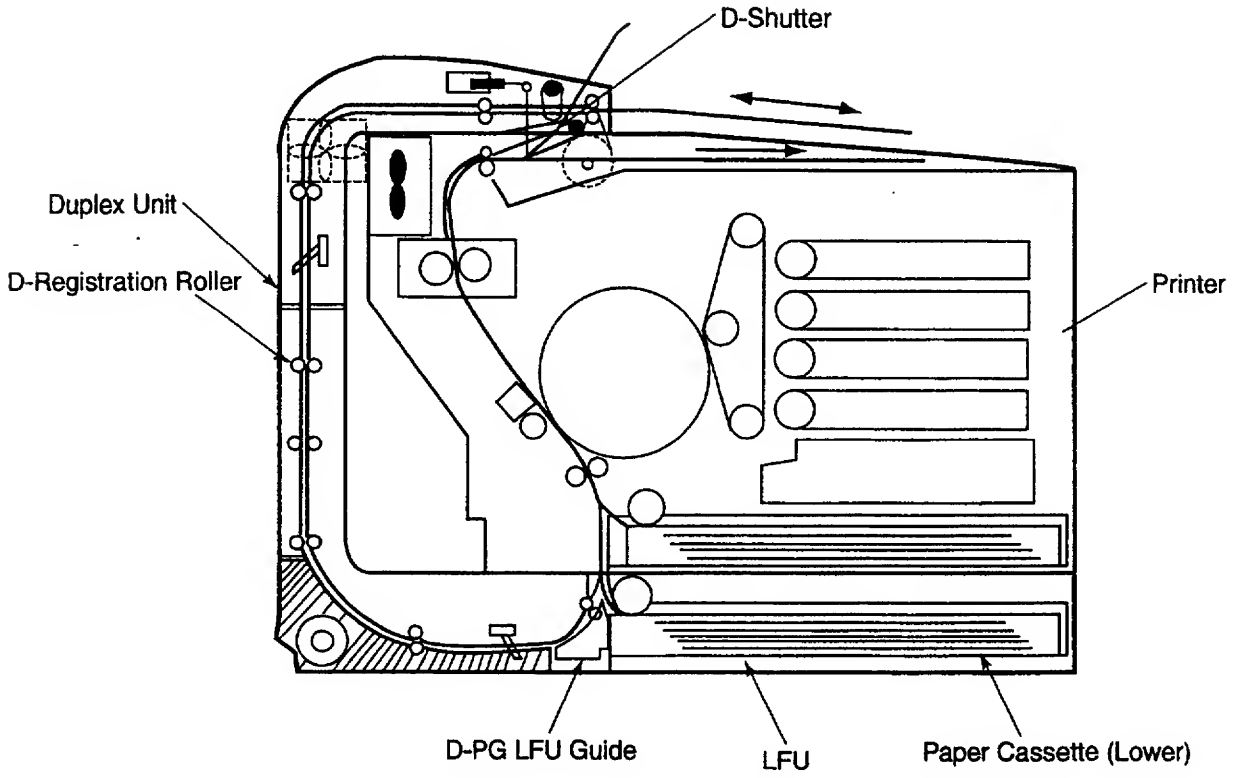
1.2 Internal Structure

(1) Printing Part



No.	Name of Components	Outline of Functions
1	Toner Cartridge	To contain the toners (K, Y, M, C) for developing. Each toner cartridge of K,Y, M, C is independent.
2	Belt Cartridge	To form images, including the OPC belt.
3	Drum Cleaner	To clean and collect waste toner adhering to the transfer drum.
4	Fusing Unit	To fuse by heat the toner images on the paper.
5	Transfer Unit	To transfer toner images from the transfer drum to the paper.
6	Transfer Drum	To form color images, maintaining the toner images of OPC belt on the drum.
7	Paper Discharger	To emit the corona for separating a paper from transfer drum.
8	Transfer Roller	To transfer the toner image of transfer drum to a paper.
9	Paper Cassette (Upper)	To feed papers automatically.
10	Paper Pick Up Roller	To feed papers automatically from the paper cassette.
11	Optical Unit	To generate a laser beam and scan over the OPC belt.

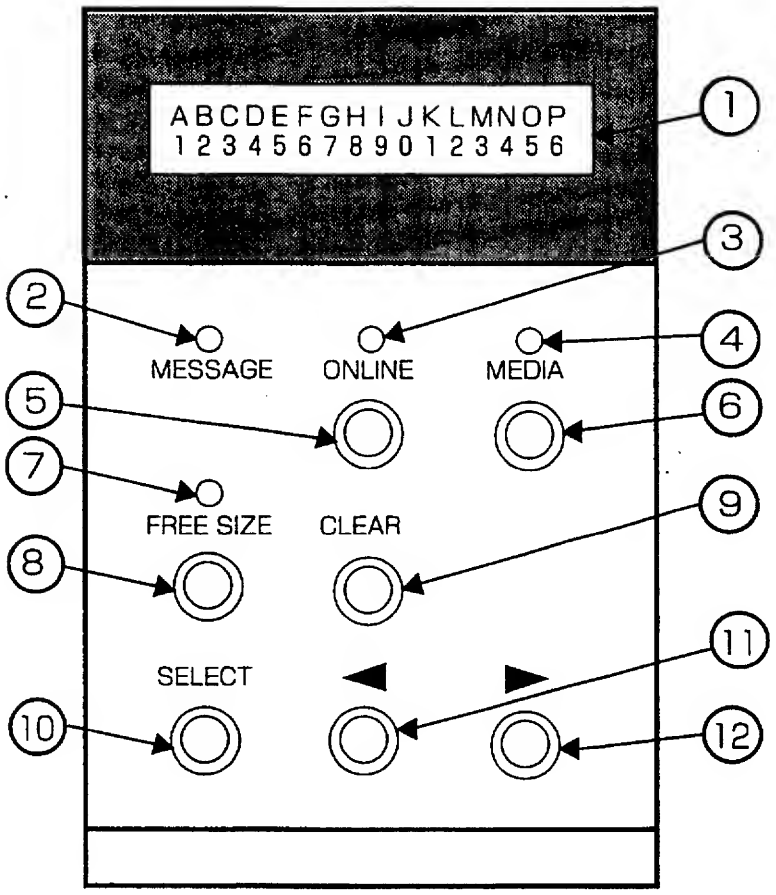
(2) Duplex Transportation Unit



No.	Name of Component	Outline of Functions
1	Duplex Unit	Paper Tarnsportation Unit for Duplex Printing.
2	D-Registration Roller	Paper Registration Roller for Duplex Printing.
3	D-Shutter	Switching Guide to change paper feeding direction.
4	D-PG LFU Guide	Paper Feed Guide for One-Sided Printing and Duplex Printing.
5	Paper Cassette (Lower)	Cassette for Automatic Paper Feeding.

1.3 Description of Operator Panel

(1) Standard



Description:

①	LCD:16 characters by 2 lines
②	Message LED
③	Online LED
④	Media LED
⑤	Online Key
⑥	Media Select Key
⑦	Free Size LED (Red)
⑧	Free Size Key
⑨	Clear Key
⑩	Select Key
⑪	Scroll Key (Left)
⑫	Scroll Key (Right)

2. Specifications of Product

2.1 Rating 2-1

2.2 General Specification 2-2

2.3 Environmental Condition 2-5

2. Specifications of Product

2.1 Rating

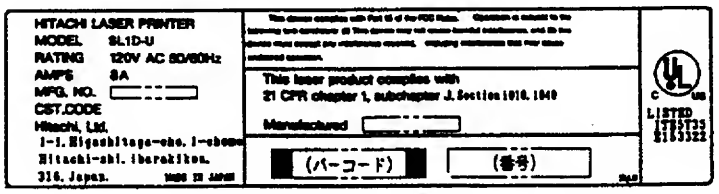
⚠ WARNING

Use the power supply cord provided as an accessory, or the similar cord complying with following specification (3-wire power cord with grounding). Use of the "out of specification" cord may result in the electric shock.

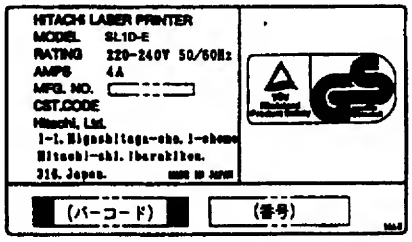
Name of Model	Voltage (V)	Frequency (Hz)	Input Current (A)	Power Cord (Piece)
SL1D-U	120	50/60	8	1 (Standard)
SL1D-E	220 - 240	50/60	4	Not included. *1
SL1D-J	100	50/60	10	1 (Standard)

*1: As to SL1-E, customers are requested to purchase and use the power cord complying with the following specifications.

Figure	Name of Model	Rating	Approval Agency	Applicable Area
A	H05VV-F3G0.75	250VAC, 6A	VDE, OVE, SEMKO, CEBEC, NEMKO, DEMKO, FIMKO	Europe (Continent)
B	H05VV-F3-0.75	250VAC, 6A	BS	UK



Rating label of SL1D-U



Rating label of SL1D-E

Fig.A: Power Cord for Europe

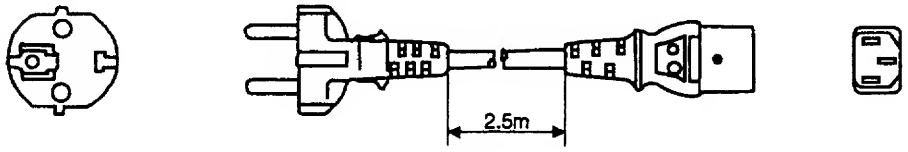
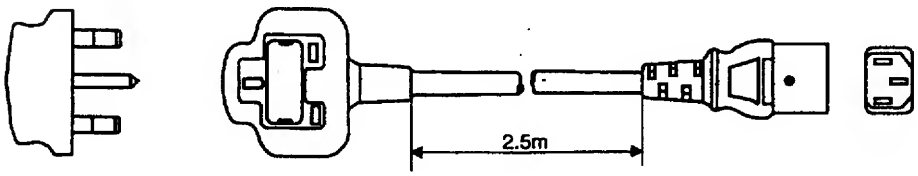


Fig.A: Power Cord for Europe



2.2 General Specification

<table>
<tr><th>No.</th><th>Item</th><th>Description</th></tr>
<tr><td>1</td><td>Printing Method</td><td>Semiconductor Laser and Electrophotography</td></tr>
<tr><td>2</td><td>Print Speed

a). Monochrome

b). 2 (two) Color

c). 3 (three) Color

d). 4 (four) Color</td><td>Cassette Feed and Continuous Print:
<table><tr><th>One-sided print</th><th>Duplex print</th></tr><tr><td>a). 16 sheets per minutes (Letter size)</td><td>8 sheets per minutes (Letter size)</td></tr><tr><td>b). 8 sheets per minutes (Letter size)</td><td>4 sheets per minutes (Letter size)</td></tr><tr><td>c). 5.3 sheets per minutes. (Letter size)</td><td>2.65 sheets per minutes (Letter size)</td></tr><tr><td>d). 4 sheets per minutes (Letter size)</td><td>2 sheets per minutes (Letter size)</td></tr></table></td></tr>
<tr><td>3</td><td>Warming-Up Time</td><td>210 seconds (max.), 180 seconds (Normal)</td></tr>
<tr><td>4</td><td>Resolution</td><td>600dpi</td></tr>
<tr><td>5</td><td>Feeding Method</td><td>Cassette Feed (two cassettes, upper and lower)</td></tr>
<tr><td>6</td><td>Cassette Capacity</td><td>Ordinary Paper: 250 sheets per each cassette.
OHP: 50 sheets per each cassette.</td></tr>
<tr><td rowspan="2">7</td><td rowspan="2">Printable Media</td><td>Letter, Legal, Executive (A4, B5)</td></tr>
<tr><td>OHP, Label (one-sided print only),
Envelope (one-sided print only, and available for upper cassette only.)</td></tr>
<tr><td>8</td><td>Paper Exit System</td><td>(At one-sided printing)
Face Down, 250 sheets (capacity)</td></tr>
<tr><td>9</td><td>External Dimension</td><td>500 (W) × 570 (D) × 547 (H) (unit: mm)
19.7 (W) × 22.4 (D) × 21.5 (H) (unit: inch)</td></tr>
<tr><td>10</td><td>Weight of Printer</td><td>Approximately 48kg (106 pounds)</td></tr>
</table>

Table 2-1: Characteristics of Hitachi Paper

Item	Description
Basis Weight (g/m^2)	82±5
Thickness (μ m)	95±6
Smoothness (Bekk) (seconds)	90±20
Stiffness (Clark)	100±15
Brightness (%)	85±2
Surface Resistance (Ω)	$10^{10} \sim 10^{11}$
Grain Direction	Long

Measurement Condition: 17.5 ~ 27.0 °C , 50 ~ 70%RH

[Note]: Keep the paper sealed, and do not open the paper bag until using the papers.

Table 2-2: Characteristics of Hitachi Recommend Paper, OHP Sheet, and Label

Item \ Media		Paper Xerox 4024	Paper Hammermill Laser print (white)	Label Avery 5260	OHP Sheet	SPHINX Auto Fil #1914
Basis Weight (g/m^2)		75±4	90±4	163±7	142±4	90±4
Thickness (μ /m)		102±6	105±6	184±7	110±6	125±10
Smoothness(Bekk)		35±4	120±20	20±6	500±100	22±10
Stiffness (Clark)		100±15	90±15	65±15	56±15	70±20
Surface Resistance $\times 10^9$ (Ω)		10～100	10～100	1～100	10～1000 ☆ 10～1000 ★	1～100
CIE LAB L*a*b*	L*	94±2	94±2	93±2	≧80% (Transmittance)	———
	a*	0.4±1	−0.5±1	−0.2±1		
	b*	1.6±1	2.2±1	4.5±1		
Brightness (%)		80±2	85±2	77±3	———	82±5
Grain Direction		Long	Long	Long	———	———

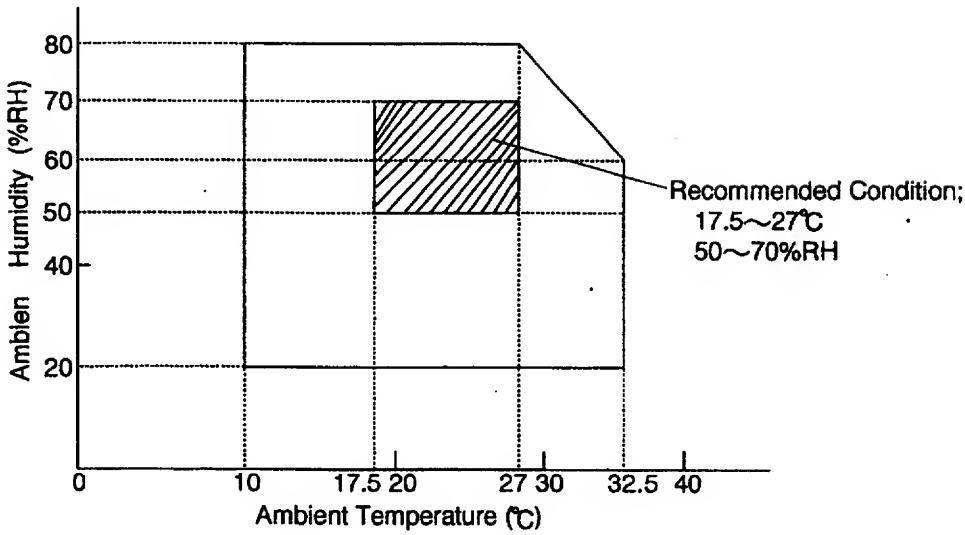
☆ : Printed Side
★ : Back Side

Measurement Condition: 17.5～27.0 °C , 50～70%RH

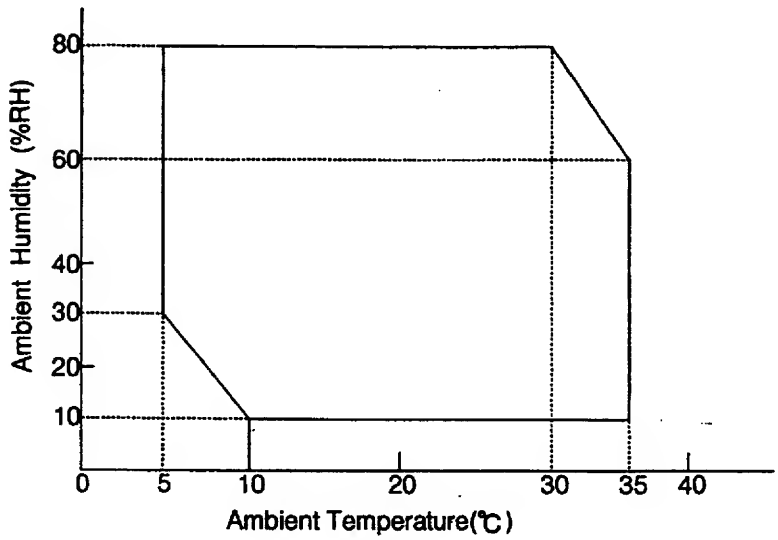
2.3 Environmental Condition

(1). Ambient Temperature / Humidity / Altitude:

(a). Under Operation: 10.0 ~ 32.5 °C , 20 ~ 80%RH
(See the figure below.)



(b). Under No Operation: 5.0 ~ 35.0 °C , 10 ~ 80%RH
(See the figure below.)



(c). Storage and Transportation Environment of Printer

The following defines the storage and transportation environment of the printers that have been packed according to Hitachi specification. However, this section does not cover the belt cartridges, toner cartridges and developer cartridges. In particular, since consumables such as toner etc. are packaged, the following environmental conditions should be respected. During transportation, strictly refrain from leaving the goods on the ground or under the blazing sun.

Temperature	Normal Condition	0°C ~ 35°C (32°F ~ 95°F)
	Severe Condition	High Temperature: 35°C ~ 40°C (95°F ~104°F)
		Low Temperature: –10°C ~ 0°C (14°F ~ 32°F)
Humidity	10% ~ 90%RH	
Period of Storage	One Year	
Other	No Condensation	
Atmosphere	613 ~ 1,067hpa (460 ~ 800mmHg)	

The period under the severe condition should not be continuous, but assumed as accumulation of intermittent time. However, the accumulation of intermittent time should not by any means exceed 48 hours at maximum.

[Note]: Normal condition should occupy more than 90% of total storage period.
Sever condition should be less than 10% of total storage period.

3. Installation

3.1 Conditions for Installation 3-1

3.2 Unpacking 3-2

3.2.1 Unpacking of Printer 3-2

3.2.2 Unpacking of Starter Kit 3-4

3.3 Installation Work 3-5

3.3.1 Installation of Cleaning Roller and Oil Bottle 3-5

3.3.2 Installation of OPC Belt Cartridge 3-6

3.3.3 Installation of toner cartridge to the printer 3-7

3.4 Test Run and Test Print 3-8

3.4.1 Power-On & Off 3-8

3.4.2 Test Print 3-10

3.4.3 On-Line Print 3-13

3. Installation

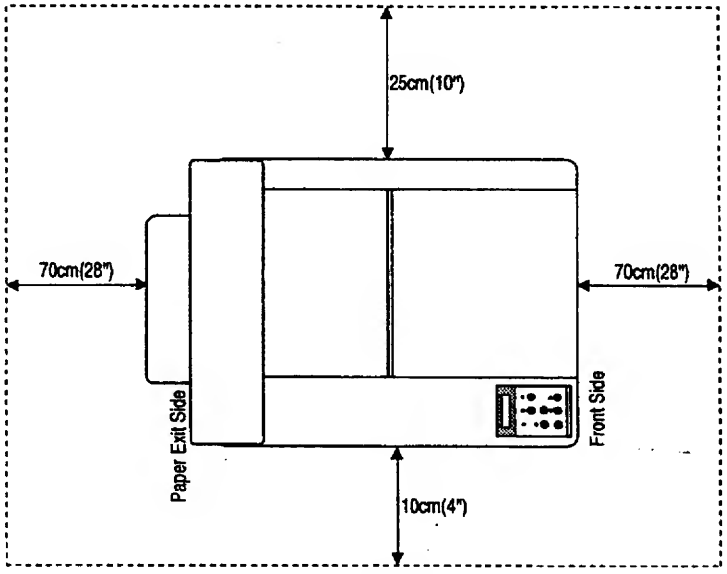
3.1 Conditions for Installation

Laser beam printer is likely influenced by the environment of set-up location. IF Printer was set up at the inappropriate location, the printer may not perform the characteristic functions as expected. Therefore, the following factors should be taken into consideration prior to deciding where to set.

(1). Environmental Conditions
Printer should not be set up at the locations referred to by the following items (a) through (d) specifying the inappropriate locations for set-up.

(a). Likely to receive the direct sunbeam or similar light.
(For example, window side)
(b). Likely to cause the big difference in temperature and humidity between the maximum and minimum level. (Normal operation environment is within 10°C ~ 35°C , 20 ~ 80%RH and without any condensation.)
(c). Likely to receive cold wind from air-conditioner or worm wind from heater, or to receive direct radiant heat.
(d). Likely to cause much dust or have corrosive gas like ammonia.
(e). Users to select the location of good ventilation and set a printer on the flat surface.
(f). Users to check the maximum tilt of set-up location to be within ±1°.

(2). Basic Layout of Printer Set-Up Location
Fig.3-1 shows the basic layout of printer set-up location suitable for the smooth operation and maintenance of printer.



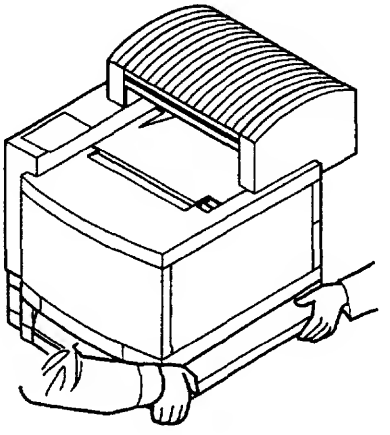
[Fig.3-1]

3.2 Unpacking

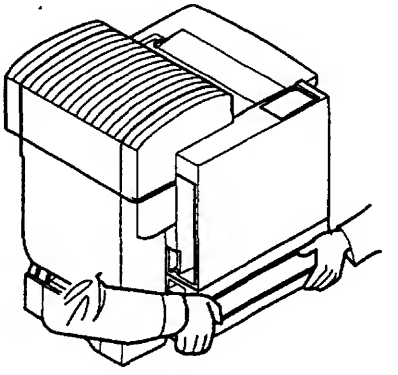
⚠ WARNING

- The printer weighs approximately 50kg, so that it is too heavy for one person to carry. It needs more than two adults to move the printer. Since this printer is a precision machine, ensure to carry it slowly with good care so that no impact shall be given to the printer while moving.

- Do not attempt to hold a printer as covered by vinyl sheet, because it is slippery and results in damage and injury if dropped from your hand.



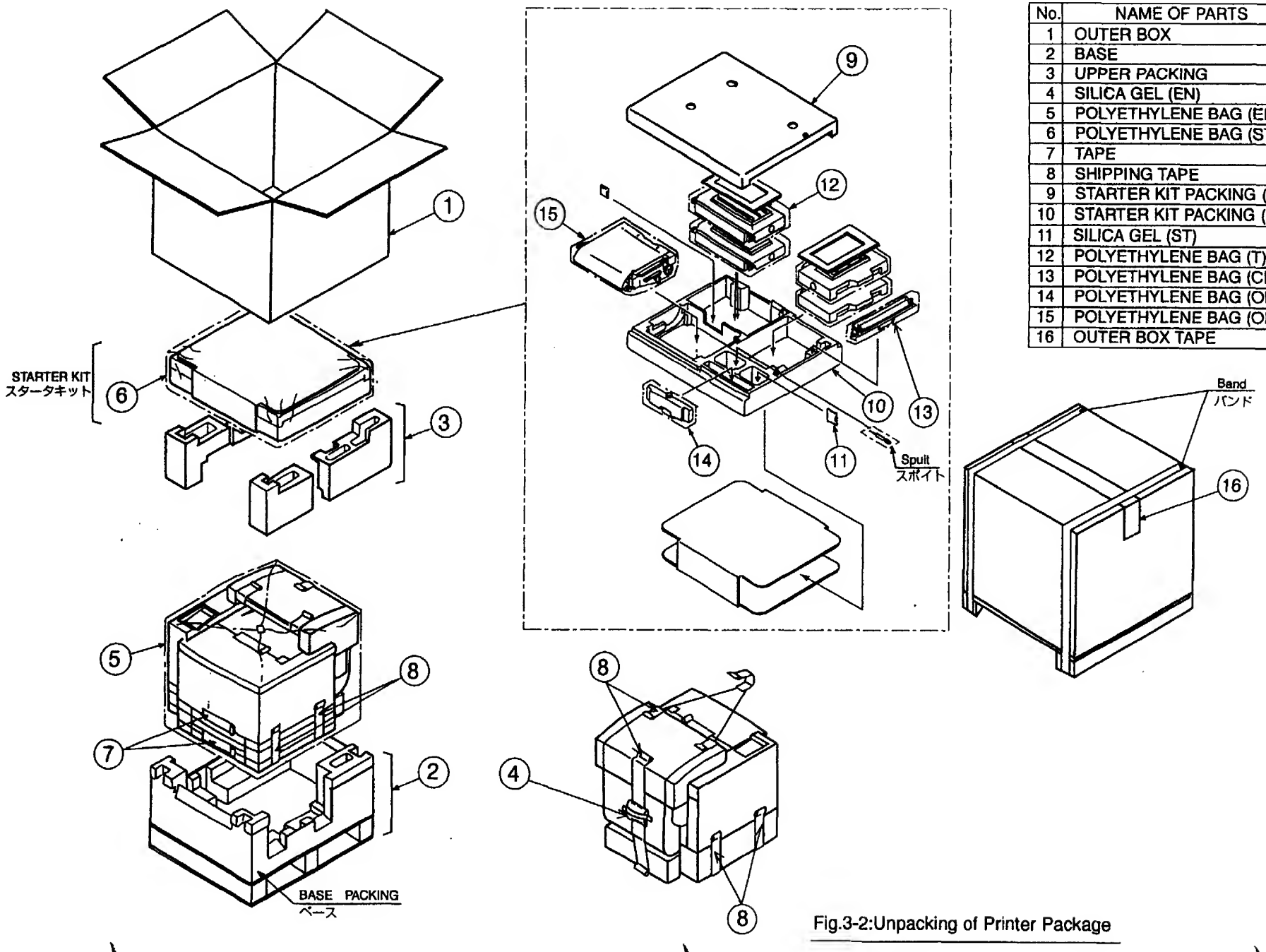
[Front Face]



[Back Face]

3-2-1 Unpacking of Printer (Fig.3-2)

①. Cut the bands (2 pcs.) binding the package.
②. Remove the tape ⑱ binding the top of package.
③. Open up the top of package to take the starter kit out.
④. Lift the outer box ① up for removal.
⑤. Remove the top partition packing ③.
⑥. Take the power cable out.
⑦. Open up the vinyl sheet ⑤ covering the printer body.
⑧. Lift up the printer body with another person's help, and lay it on the floor.
⑨. Set up the printer on the suitable location.
⑩. Remove the shipping tapes (7 locations) .



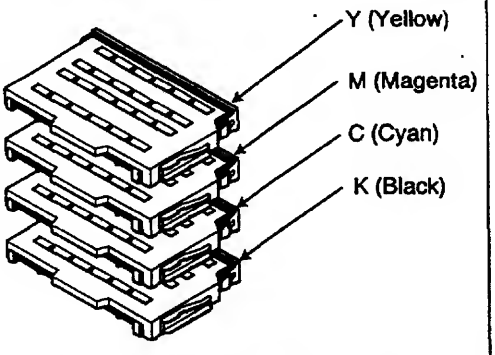
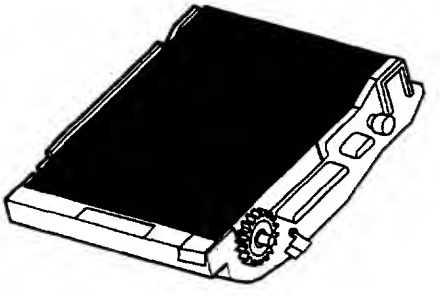
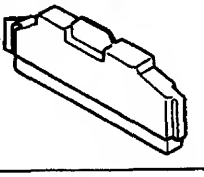
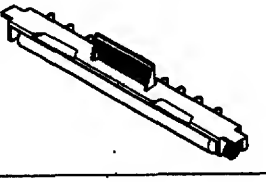
No.	NAME OF PARTS	Q'TY
1	OUTER BOX	1
2	BASE	1
3	UPPER PACKING	1
4	SILICA GEL (EN)	1
5	POLYETHYLENE BAG (EN)	1
6	POLYETHYLENE BAG (ST)	1
7	TAPE	1
8	SHIPPING TAPE	7
9	STARTER KIT PACKING (U)	1
10	STARTER KIT PACKING (L)	1
11	SILICA GEL (ST)	2
12	POLYETHYLENE BAG (T)	4
13	POLYETHYLENE BAG (CL)	1
14	POLYETHYLENE BAG (OIL)	1
15	POLYETHYLENE BAG (OPC)	1
16	OUTER BOX TAPE	1

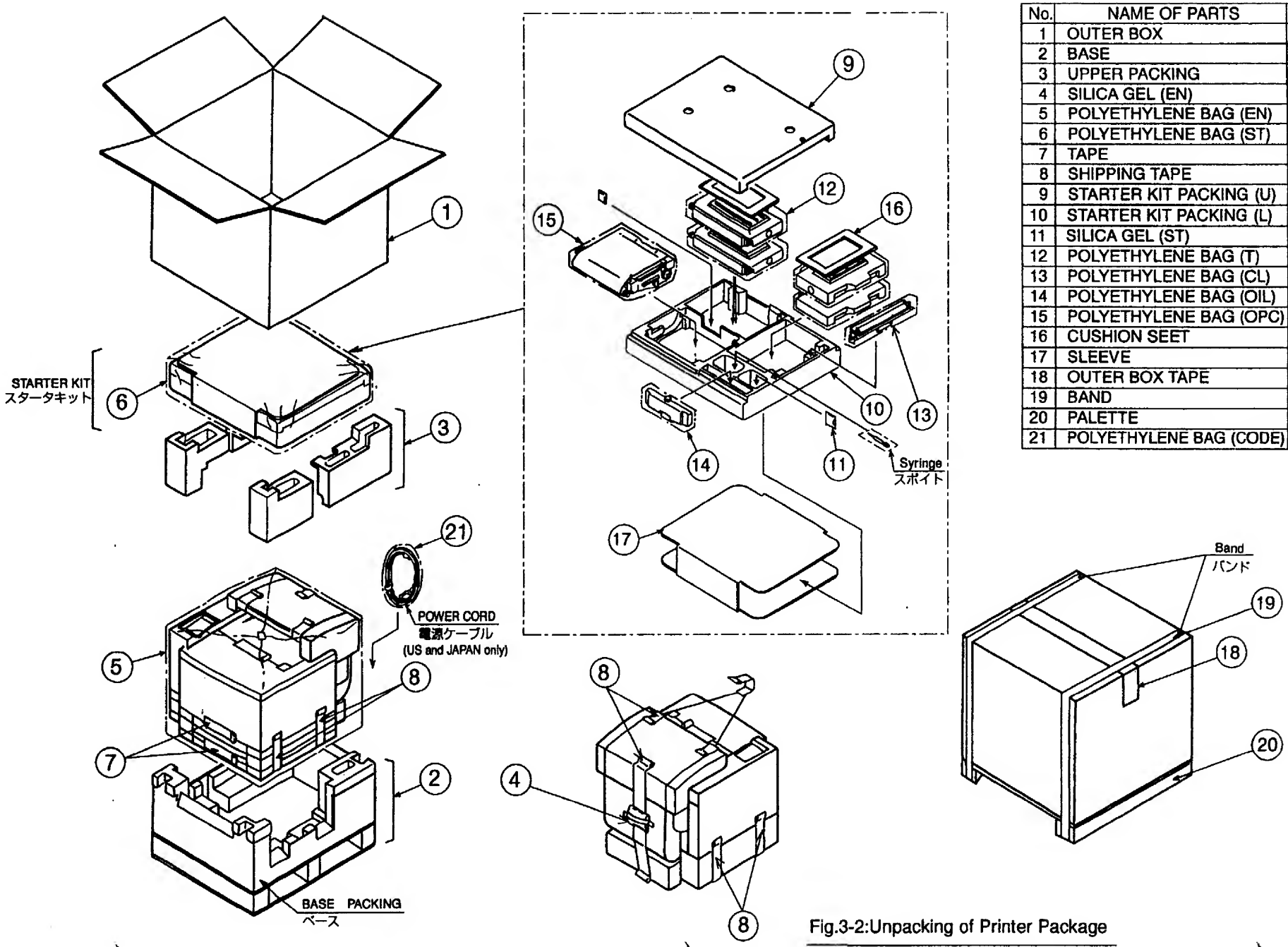
Fig.3-2:Unpacking of Printer Package

3-2-2 Unpacking of Starter Kit

Procedure of Unpacking

①. Open up the vinyl sheet covering the starter kit.
②. Confirm all of the following kits to be inside the starter kit's packing box.

No.	Name of Kit	Appearance	Quantity
1	Toner Cartridge (Y.M.C.K)		4
2	OPC Belt Cartridge		1
3	Oil Bottle		1 set.
4	Cleaning Roller		1
5	Spuit		1



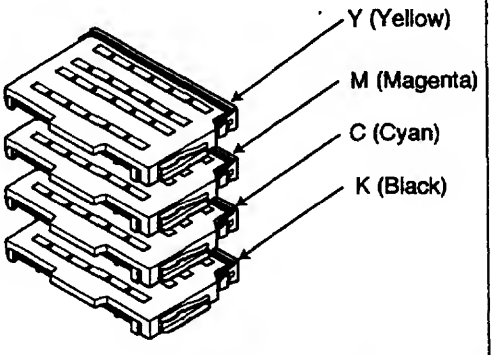
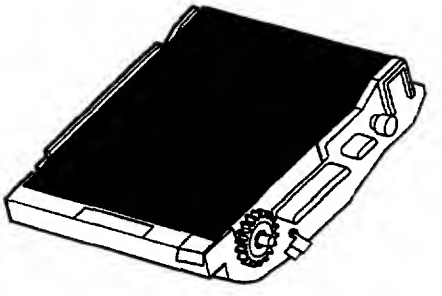
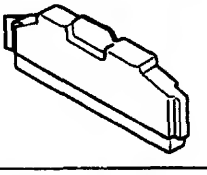
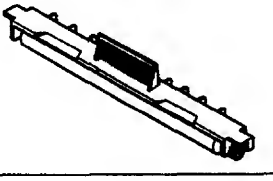
No.	NAME OF PARTS	QTY
1	OUTER BOX	1
2	BASE	1
3	UPPER PACKING	1
4	SILICA GEL (EN)	1
5	POLYETHYLENE BAG (EN)	1
6	POLYETHYLENE BAG (ST)	1
7	TAPE	1
8	SHIPPING TAPE	7
9	STARTER KIT PACKING (U)	1
10	STARTER KIT PACKING (L)	1
11	SILICA GEL (ST)	2
12	POLYETHYLENE BAG (T)	4
13	POLYETHYLENE BAG (CL)	1
14	POLYETHYLENE BAG (OIL)	1
15	POLYETHYLENE BAG (OPC)	1
16	CUSHION SEET	2
17	SLEEVE	1
18	OUTER BOX TAPE	1
19	BAND	2
20	PALETTE	1
21	POLYETHYLENE BAG (CODE)	1

Fig.3-2:Unpacking of Printer Package

3-2-2 Unpacking of Starter Kit

Procedure of Unpacking

①. Open up the vinyl sheet covering the starter kit.
②. Confirm all of the following kits to be inside the starter kit's packing box.

No.	Name of Kit	Appearance	Quantity
1	Toner Cartridge (Y.M.C.K)		4
2	OPC Belt Cartridge		1
3	Oil Bottle		1 set.
4	Cleaning Roller		1
5	Syringe		1

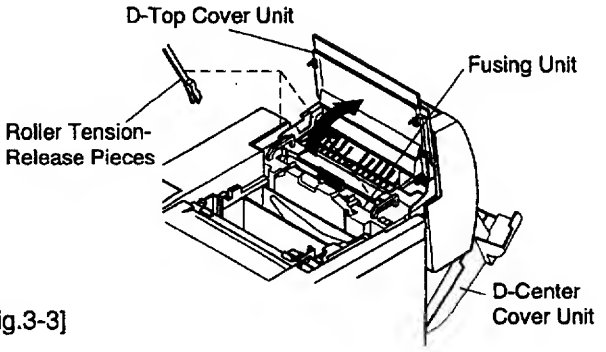
3.3 Installation Work

Install the unit parts of starter kit to the printer according to the following procedures:

3.3.1 Installation of Cleaning Roller and Oil Bottle:(Fig.3-3 ~ 3-5)

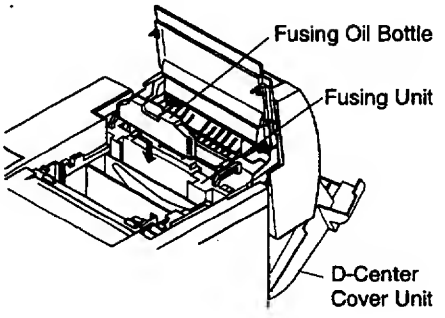
Procedures of Installation

①. Open the D-center cover unit.
②. Open the D-top cover unit.
③. Remove the roller tension-release pieces (two locations) provided for transportation.



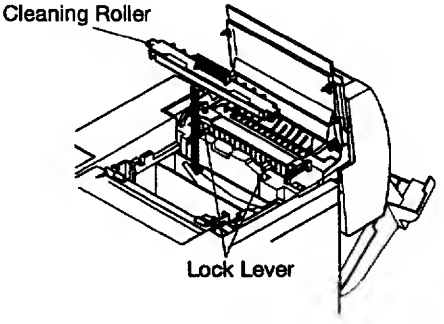
[Fig.3-3]

④. Open the retainer lock lever of oil bottle and the cleaning roller.
⑤. Install the oil bottle to the fusing unit.

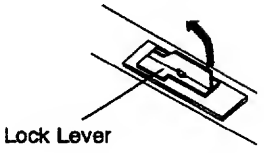


[Fig.3-4]

⑥. Install the cleaning roller to the fusing unit.
⑦. Hold the cleaning roller with the retainer lock lever.
⑧. Close the D-top cover unit.
⑨. Close the D-center cover unit.



[Fig.3-5]



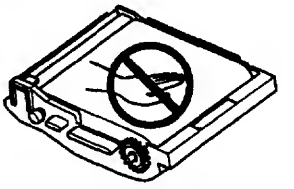
⚠ Caution

- Make sure to open D center cover unit prior to opening D top cover unit.
- Forced opening of D top cover unit may damage the unit itself.

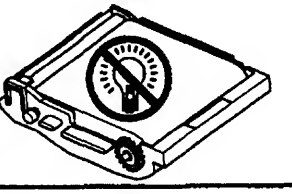
3.3.2 Installation of OPC Belt Cartridge: (Fig.3-6 ~ 3-9)

⚠ PRECAUTION

Do not directly touch the OPC belt surface with bare hands or gloves.



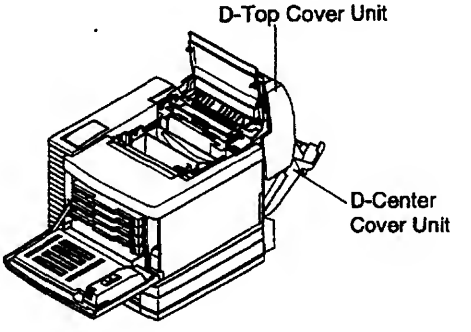
If OPC belt is exposed for more than two minutes under the light of 800 lux, the belt may be defective.



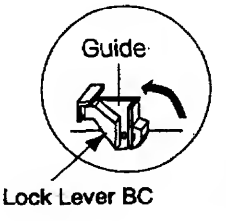
Procedures of Installation

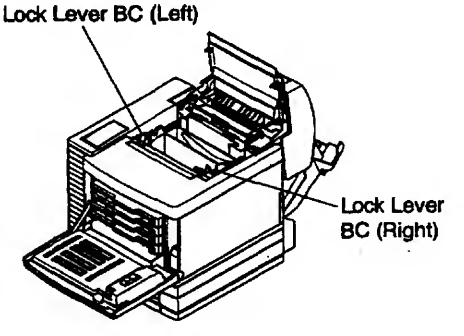
①. Open the front cover unit.
②. Open the D-center cover unit.
③. Open the D-top cover unit.

④. Erect the lock lever BC provided at both sides (left and right).



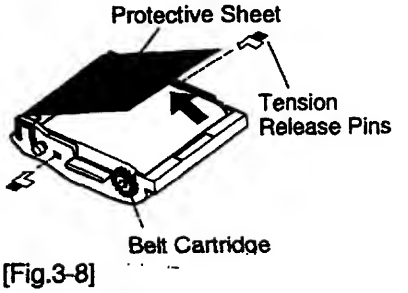
[Fig.3-6]





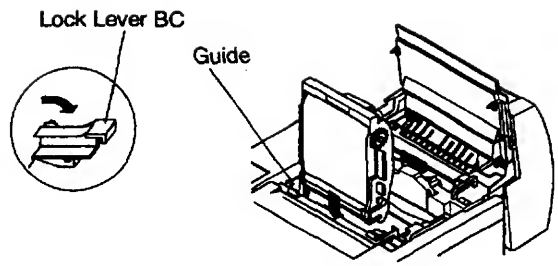
[Fig.3-7]

⑤. Pull and remove the tension release pins of both sides (left & right).
⑥. Remove the protective sheet from a new belt cartridge.
⑦. Push the new belt cartridge into the printer, along the guide of lock lever BC provided at both sides.



[Fig.3-8]

⑧. Push new belt cartridge along the guide of both sides into the printer.
⑨. Set the lock lever BC.
⑩. Close the D-top cover unit.
⑪. Close the D-center cover unit.
⑫. Close the front cover.

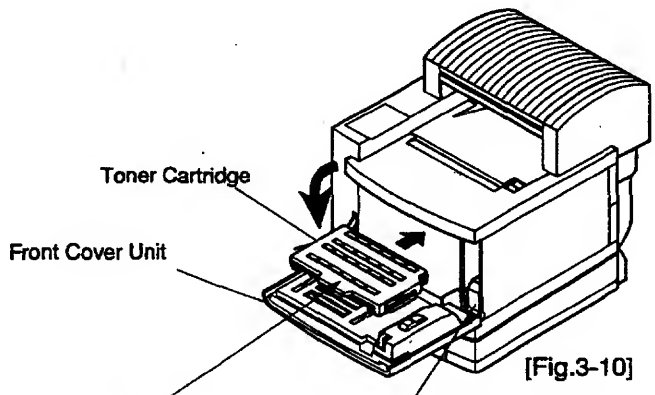


[Fig.3-9]

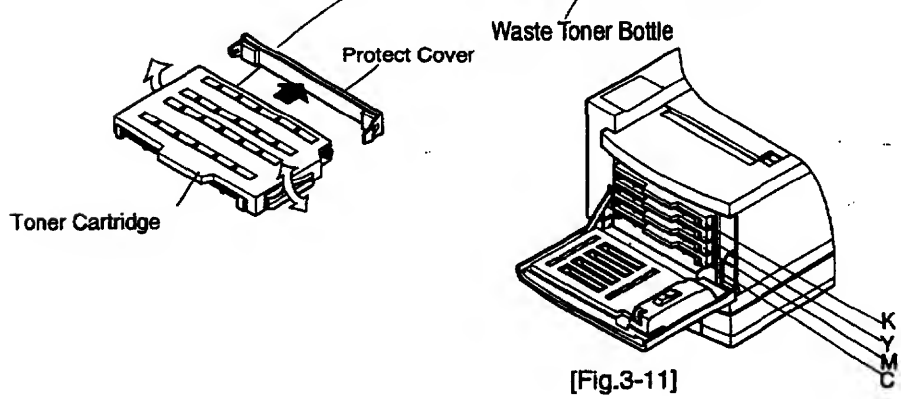
3.3.3 Installation of toner cartridge to the printer: (Fig.3-10~3-11)

> **⚠ Caution**
>
> Refrain from holding a toner cartridge vertically, otherwise, it may adversely affect the print quality.

①. Open the front cover unit.
②. Holding a toner cartridge horizontally, shake it to left and right for three to four times.
③. Remove a protective cover of toner cartridge.
④. Push the new toner cartridge along the guide into the printer.
Installation order of toner cartridge in terms of color shall be Cyan (C), Magenta (M), Yellow (Y), and Black (K).
⑤. Confirm that waste toner bottle is securely installed.
⑥. Close the front cover unit.



[Fig.3-10]



[Fig.3-11]

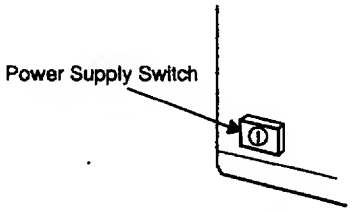
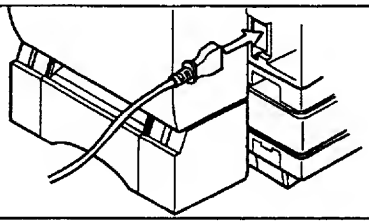
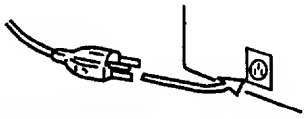
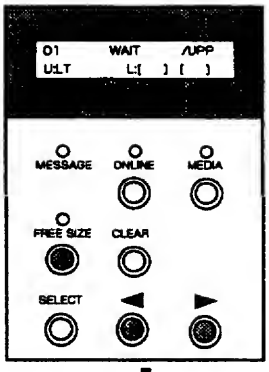
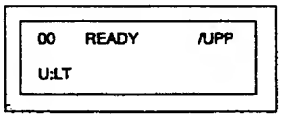
3.4 Test Run & Test Print

Load the paper onto the paper cassette prior to this test run and test print.

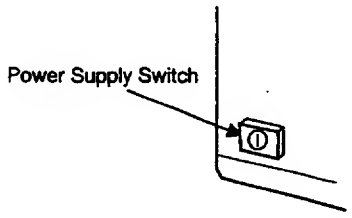
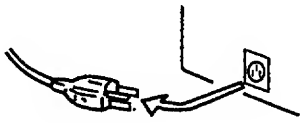
3.4.1 Power-On & Off

(1). Power-On:

There is ⏻ mark on the power supply switch located on the side panel of the printer. ⏻ represents the power supply switch of push-on/push-off function.

1	Prior to connecting a power cable, confirm that the push button top of power supply switch located at the lower left front of printer projects from the cover surface. This means that the printer is in the power-off status.	
2	Connect a connector of power supply cable to the printer.	
3	Insert a plug of the power supply cable to the inlet.	
4	Pressing the scroll keys (left & right) and Free Size key, push the push button top of power supply switch. Next, press the ONLINE key. Then, the display of operator panel turns to be the status of (a), and "MESSAGE" LED lamp starts to blink. This blinking means that the printer is in the warming-up process.	(a). Indication at Warming-UP 
5	"MESSAGE" LED lamp changes to be lit within 210 seconds at max., when screen (b) appears on the operator panel display..	(a). Indication at Warming-UP 

(2). Power-Off:

1	Push the push button top of power supply switch in order to shut off the power supply to the printer. (This switch is push-on/push-off type.)	
2	Unplug the power supply cord from the inlet.	

(3) Precaution while power-on & off operation:

⚠ PRECAUTION

Prior to unplugging the power supply cord, confirm that the main switch located on the side panel of printer is set to the Push-Off.

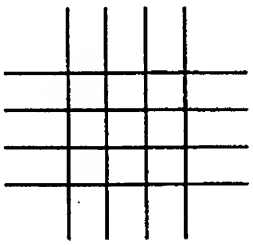
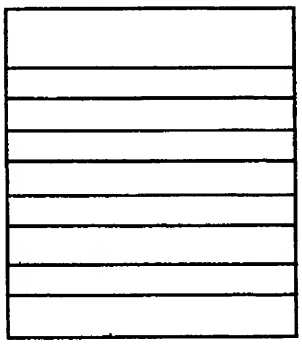
Strictly refrain from powering off or unplugging while the printer is performing the printing operation.

When resetting the power-on, make sure to wait at least 5 seconds after powering off.

3.4.2 Test Print

After power-on, confirm the normal printing by test printing according to the following procedures:

(1). Procedure of Test Print

Step	Operation	Details of Operation
1	Power-On	Upon completion of the warming-up process, printer is ready to print and waits for PRINT signal. [See the power-on in Section 4.1-(1).]
2	Test Print See Item (2) "Test Print Procedures" for details.	Printer has the following built-in print patterns for test printing. 1). Grid Pattern : Available in mono color print of Y, M, C, K, and two color print of R, G, B.  GRID 2). Stripe Pattern: Available in color print of Y, M, C, K, R, G, B.  STRIPE

(2) Test Print Procedures

Implement the test print according to the following procedures upon completion of the warming-up process.

Procedure

① Warming-up process is completed.

② Press ONLINE key so that display changes from screen (a) to (b).

③ Press SELECT key so that display changes from screen (b) to (c).

④ Select GRID or STRIPE pattern with scroll key.
(GRID to be selected.)

⑤ Press SELECT key so that display changes from screen (c) to (d).

⑥ Select the color to be printed with scroll key.
(R to be selected.)

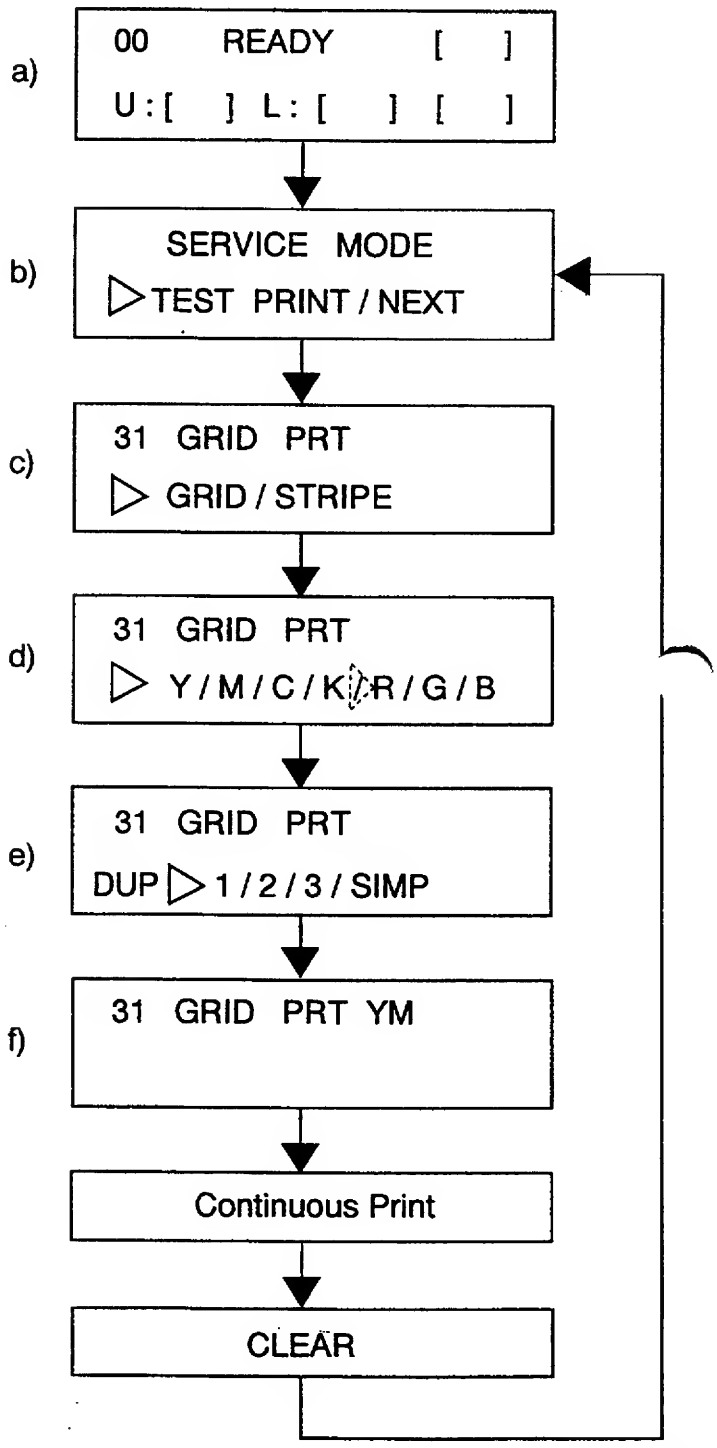
⑦ Press SELECT key so that display changes from screen (d) to (e).

⑧ Warming-up starts, and continuous print will be automatically carried out upon completion of the warming-up.

⑨ Printing operation will be suspended by pressing CLEAR key, and display changes from screen (e) to (b).

⑩ Printer will be returned to ONLINE mode by pressing ONLINE key.

Indication of Operator Panel



(3). Selection of Media

Pressing the media select key on the operator panel, select the suitable process for the media to be used.

When the media select key is pressed, the media lamp changes as follows:

Condition of Media Lamp	Selected Media
Lit Out	Ordinary Paper
Lit	OHP Sheet
Blinking	Stock Paper, Label

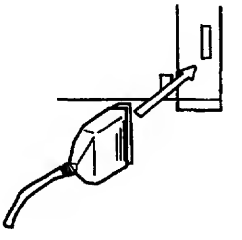
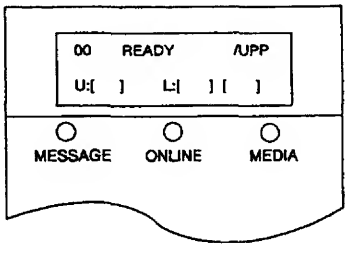
(4). Operator Call

When "Operator Call" is indicated on the operator panel, see "Operator Call" column in Sub-section 8.1- (1), and take necessary actions accordingly.

3.4.3 On-Line Print

Upon confirmation of normal printing by the test print mode, proceed with the On-Line Print according to the following procedures. However, since this Operator Manual does not refer to the connection method of Interface, or the operating method of Host side, make sure to read the operation procedure of the Host prior to starting the On-Line Print.

(1). Procedure of Operation

Step	Operation	Details of Operation
1	Connect the interface cable to the host machine.	
2	Push the push button top of power supply.	
3	Confirm that the printer is set to the On-Line mode. (Display as per right-hand figure.)	Confirm what is indicated on the operator panel. 
4	Upon completion of warming-up process, "MESSAGE" LED lamp is lit. This warming-up process is 210 seconds at maximum.	
5	Printer start the printing operation upon receipt of the PRINT signal transmitted from the Host.	

4. Structure of Each Part

4.1 Paper Transportation System (Roller, Guide, Belt) 4-1

4.2 Motor and Solenoid 4-2

4.3 Print P.W.B 4-3

4.4 Switch and Sensor 4-4

4.5 Connection Drawing and Pin Layout 4-6

4.5.1 Wiring Diagram SL1D 4-6

4.5.2 Wiring Diagram of Duplex Unit 4-7

4.5.3 Connector Pin Layout 4-8

4. Structure of Each Part

4.1 Paper Transportation System (Roller, Guide, Belt)

No.	Part Name	Symbol	Function
1	1st Roller (T) [Switch-Back Roller]	D-RT1	To exit printed paper once and then switch back the paper for duplex printing.
2	2nd Roller (T)	D-RT2	To transport paper at top cover unit.
3	3rd Roller (T)	D-RT3	To transport paper at top cover unit.
4	D Registration Roller	D-RR	To register paper for duplex printing.
5	1st Roller (C)	D-RC1	To transport paper at center cover unit.
6	2nd Roller (C)	D-RC2	To transport paper at center cover unit.
7	1st Roller (B)	D-RB1	To pick up paper for duplex printing.
8	2nd Roller (B) [Duplex Paper Feeder Roller]	D-RB2	To pick up paper for duplex printing.
9	D-Shutter	D-SHUT	To perform as the guide switching the paper exit path and duplex print path.
10	D-PG LFU Guide	D-PG LFU	To perform as the paper guide feeding paper for single or duplex printing.

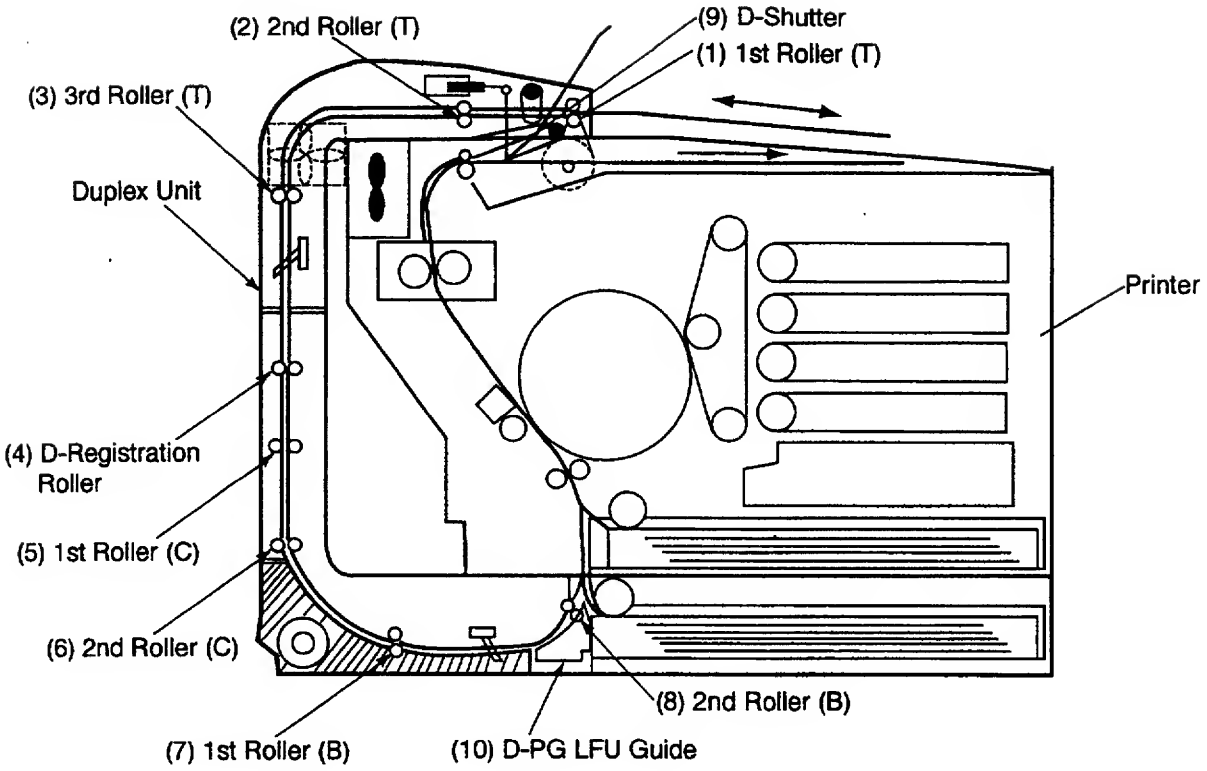

(2) 2nd Roller (T)
(9) D-Shutter
(1) 1st Roller (T)
(3) 3rd Roller (T)
Duplex Unit
Printer
(4) D-Registration Roller
(5) 1st Roller (C)
(6) 2nd Roller (C)
(8) 2nd Roller (B)
(7) 1st Roller (B)
(10) D-PG LFU Guide

Fig.4-1

4.2 Motor • Solenoid

No.	Part Name	Symbol	Function
1	DPM1 Motor	DPM1	To drive the paper transportation system that exits printed paper once and then switch back the paper for duplex printing.
2	DPM2 Motor	DPM2	To drive the paper transportation system that sends papers into D-PG • LFU Guide for duplex printing.
3	D-FAN Motor	D-FAN	To exhaust the heat of fusing unit inside D-Top Cover Unit.
4	D-Solenoid	D-SOL	To switch and drive the D-Shutter.

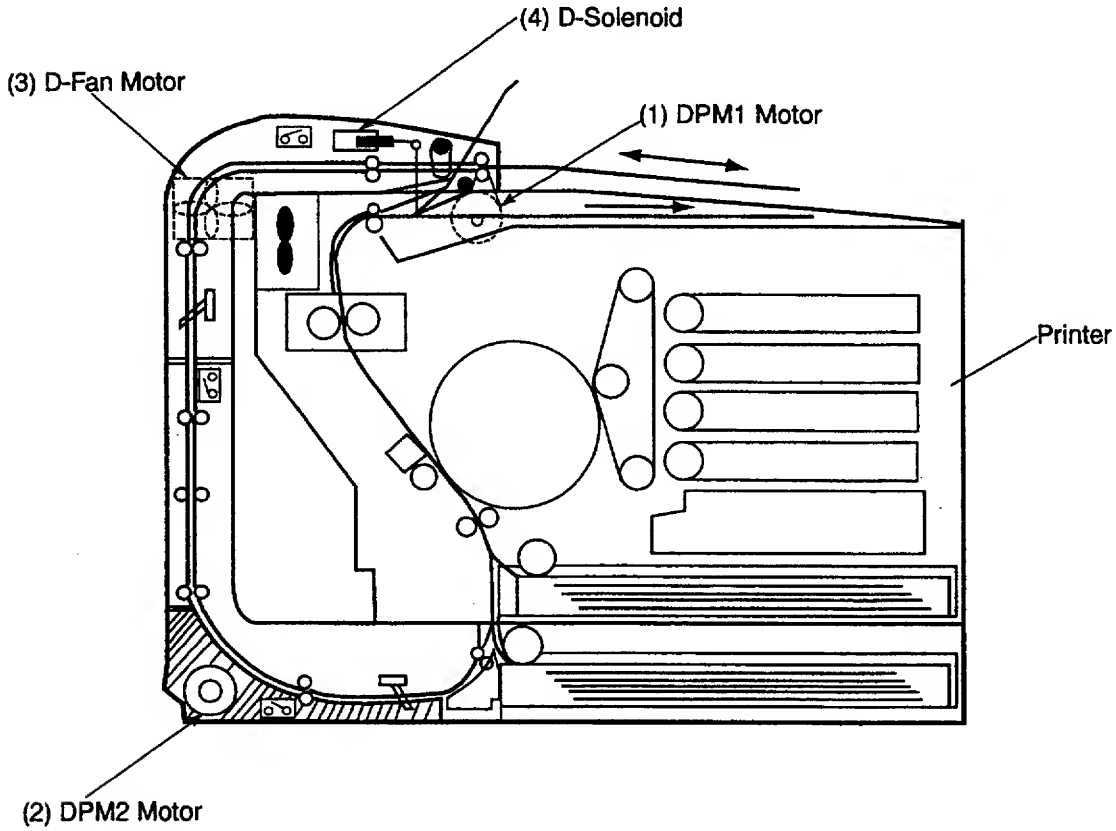


Fig.4-2

4.3 Print P.W.B

No.	Part Name	Symbol	Function
1	DUPL P.W.B	DUPL P.W.B	To control paper transportation for duplex printing and to relay the drive power supply.
2	RELAY P.W.B (U) CONECT P.W.B (U)	D-PCB-ATS	To operate D-Solenoid, D-Fan Motor, Full Exited Paper Sensing, DPM1 Motor, PT4, D-SW4, D-SW5. To relay to DUPL P.W.B.
3	RELAY P.W.B (L) CONECT P.W.B (L)	D-PCB-BTS	To operate DPM2 Motor, D-SW1, D-SW2,D-SW3, PT5. To relay to DUPL P.W.B.

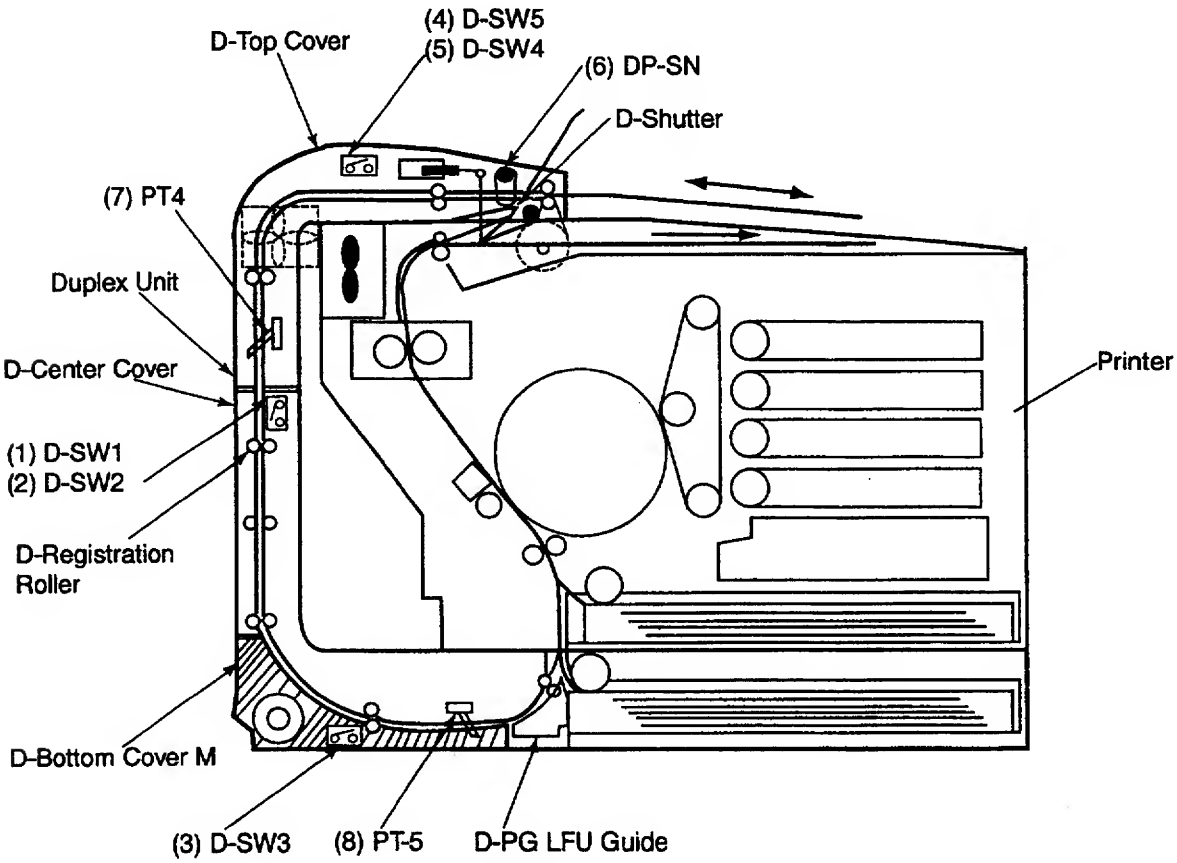


Fig.4-3

4.4 Switch and Sensor

No.	Part Name	Symbol	Function
1	Interlock Switch D-SW1	D-SW1	To check open/close status of D-Center Cover.
2	Interlock Switch D-SW2	D-SW2	To check open/close status of D-Center Cover.
3	Interlock Switch D-SW3	D-SW3	To check installation status of D-Bottom Cover M.
4	Interlock Switch D-SW4	D-SW4	To check open/close status of D-Top Cover.
5	Interlock Switch D-SW5	D-SW5	To check open/close status of D-Top Cover.
6	Full Exited Paper Sensor	DP-SN	To check exited paper full status of through sensing the movable range of D-Shutter.
7	D-Paper Sensor	PT4	To regulate the paper's leading edge (regulation of registration amount), and sense the paper jam inside D-Top Cover Unit.
8	D-Paper Sensor	PT5	To sense the paper feeding timing of duplex printing and sense the paper jam.

4.5.3 Connector Pin Layout

①

・DCN2：IOD1基板－直流電源(2列タイプ22ピン)
：IOD1 P.W.B－Power Supply Unit(22Pins)

ピンNo.	信号名	ピンNo.	信号名
1	+5v－1	2	SGND
3	+5v－1	4	SGND
5	ACSYNC－N	6	SGND
7	+24V	8	SGND
9	+5v－1R	10	ACOFF－P
11	HON－N	12	TESTI2
13	+24－1	14	TESTO2
15	+24－1	16	TESTI1
17	+24－1	18	TESTO1
19	PGND	20	PGND
21	PGND	22	PGND

②

・DCN14：IOD1基板－高圧基板(18ピン2列基板－ハーネス)
：IOD1 P.W.B－High Voltage Unit(18Pins)

ピンNo.	信号名	ピンNo.	信号名
1	+24v－1	2	PGND
3	FUCHK	4	PGND
5	ACVON－N	6	PWMON－N
7	CHVON－N	8	CHVERR
9	CBVPWM－N	10	THVRON－N
11	DBV(MC)PWM－N	12	THVPWM－N
13	DBV(KY)PWM－N	14	THV－I
15	FCBVPWM－N	16	TH1
17	NC	18	TH2

③

・DCN3：工場検査用
：For Factory Use Only(4Pins)

ピンNo.	信号名
1	TESTO1
2	TESTI1
3	TESTO2
4	TESTI1

④

・DCN4：IOD1－ドアスイッチ
：IOD1－Interlock Switch

ピンNo.	信号名
1	REARDOPEN－P
2	N.C
3	TOPDOPEN－P

(5)

・DCN1：MCTL基板－IOD1基板(50ピン2列)
：MCTL P.W.B－IOD1 P.W.B(50Pins)

ピンNo.	信号名	ピンNo.	信号名
1	SGND	2	PGND
3	SGND	4	PGND
5	+5v－1	6	+24v－1
7	+5v－1	8	HON－N
9	+5v－1	10	SGND
11	+5v－1	12	ACOFF－P
13	I/OAD2	14	+5v－1R
15	I/OAD1	16	+24v
17	I/OAD0	18	RHSON
19	I/ODATA3	20	AHUMB
21	I/ODATA2	22	ACVON－N
23	I/ODATA1	24	CHVON－N
25	I/ODATA0	26	PWMON－P
27	TMLEDON－P	28	CBVPWM－N
29	LEDON－N	30	DBV(MC)PWM－N
31	TRSLON－P	32	DBV(KY)PWM－N
33	FBSLON－P	34	FCBVPWM－N
35	FBCLON－P	36	THVRON－N
37	SPSLLON－P	38	THVPWM－N
39	PKCLLON－P	40	THV－I
41	ELON－P	42	TH2
43	PBSEN－N	44	TH1
45	HPSEN－N	46	OILLES－P
47	CTFANON－P	48	TMASEN1
49	HTFANON－P	50	TMASEN2

(6)

・DCN9：IOD1基板－IOD2(アクチュエータ)基板(14ピン2列基板－ハーネス)
：IOD1 P.W.B－IOD2 P.W.B(14Pins)

ピンNo.	信号名
1	FBCLON－P
2	FBSLON－P
3	TRSLON－P
4	OZFANERR
5	+24v－1
6	+24v－1
7	+24v－1
8	PGND
9	PGND
10	PGND
11	+5v－1
12	SGND
13	PHSON－P
14	AHUMB

(14)

・ECN1：MCTL－IOD2(20ピン2列)
：MCTL P.W.B－IOD2(20Pins)

ピンNo.	信号名
1	DCL(C)ON－P
2	DCL(M)ON－P
3	DCL(Y)ON－P
4	DCL(K)ON－P
5	PSL(KY)ON－P
6	PSL(MC)ON－P
7	MMCLK
8	MMON－N
9	MMREV－N
10	MMENC
11	DMCLK
12	DMON－N
13	ISCK
14	IDATA
15	ILOAD
16	PKCLUON－P
17	RECLON－P
18	SPSLUON－P
19	OZFANON－P
20	FUCLON－P

(35)

・DCN15：IOD1－クリーニングローラ未装着
：IOD1－Cleaning Roller Sensor

ピンNo.	信号名
1	+5v－1
2	CLROL－N
3	SGND

⑦

・DCN5：IOD1－上カセット紙有無検知
：IOD1－ＰＴ1センサ
：IOD1－ドラムセンサ
：IOD1－Upper Paper Empty Sensor(PEU)
：IOD1－Paper Feeding Sensor(PT1)
：IOD1－Drum Encoder Sensor(EN)

ピンNo.	信号名
1	＋5v－1
2	HPSEN－N
3	SGND
4	＋5v－1
5	PEU－P
6	SGND
7	＋5v－1
8	PT1－N
9	SGND

⑧

・DCN6：IOD1－上カセット紙サイズセンサ
：IOD1－OHPセンサ
：IOD1－Upper Paper Size Sensor
：IOD1－OHP Sensor

ピンNo.	信号名
1	＋5v－1
2	PSU1
3	PSU2
4	PSU3
5	PSU4
6	SGND
7	＋5v－1
8	OHPSENU
9	SGND
10	SGND

⑨

・DCN7：IOD1基板－トナー無Y
：IOD1基板－トナー無M
：IOD1基板－トナー無C
：IOD1基板－トナー無K
：IOD1基板－イレーズ
：IOD1 P.W.B－Toner Empty Sensor(Y,M,C,K)

ピンNo.	信号名
1	TLES(K)－P
2	TLES(Y)－P
3	TLES(M)－P
4	TLES(C)－P
5	TLES－G
6	SGND
7	LEDON－P
8	TLESCHK
9	SGND
10	＋24v－1
11	ELON－N

⑩

・DCN13：IOD1基板－コントローラファン
：IOD1 P.W.B－Controller Fan

ピンNo.	信号名
1	CTFANON－P
2	PGND
3	CTFANERR

⑫

・DCN10：IOD1基板－冷却ファン
：IOD1基板－PT2センサ
：IOD1 P.W.B－Paper Exit Sensor(PT2)
：IOD1 P.W.B－Heater Fan(HTFAN)

ピンNo.	信号名
1	＋5v－1
2	PT2－N
3	SGND
4	HTFANON－P
5	PGND
6	HTFANERR

⑬

・DCN11：IOD1基板－ベルト
：IOD1基板－オイル
：IOD1基板－巻付
：IOD1 P.W.B－Belt Sensor(PBS)
：IOD1 P.W.B－Oil Sensor(OIL)
：IOD1 P.W.B－Drum Paper Jam Sensor

ピンNo.	信号名
1	PBSEN－N
2	＋5v－1
3	SGND
4	OILLES－P
5	＋5v－1
6	SGND
7	E4SEN－N
8	＋5v－1
9	SGND

⑮

・ECN17：IOD2－現像クラッチY
：IOD2－Developer Clutch(Y)

ピンNo.	信号名
1	+24v－1
2	NC
3	DCL(C)ON－N

⑯

・ECN16：IOD2－現像クラッチM
：IOD2－Developer Clutch(M)

ピンNo.	信号名
1	+24v－1
2	NC
3	DCL(M)ON－N

⑰

・ECN14：IOD2－現像クラッチC
：IOD2－Developer Clutch(C)

ピンNo.	信号名
1	+24v－1
2	NC
3	DCL(Y)ON－N

⑱

・ECN13：IOD2－現像クラッチK
：IOD2－Developer Clutch(K)

ピンNo.	信号名
1	+24v－1
2	NC
3	DCL(K)ON－N

⑳

・ECN9：IOD2－定着クラッチ
：IOD2－Fuser Clutch

ピンNo.	信号名
1	+24v－1
2	NC
3	FUCLON－N

㉑

・ECN11：IOD2－クリーナクラッチ
：IOD2－Cleaner Clutch

ピンNo.	信号名
1	+24v－1
2	NC
3	FBCLON－N

⑲

・ECN3：IOD2－現像SLYMC
：IOD2－Developer Solenoid

ピンNo.	信号名
1	+5v－1
2	TBFL2－N
3	SGND
4	+5v－1
5	GHPSEN1
6	SGND
7	+5v－1
8	GHPSEN2
9	SGND
10	PSL(YM)
11	+24v－1
12	+24v－1
13	PSL(KC)

㉒

・ECN6：IOD2－オゾンファン
：IOD2－Ozen Fan

ピンNo.	信号名
1	OZFANON－P
2	PGND
3	OZFANERR

㉓

・ECN7：IOD2－レジストクラッチ
：IOD2－Registlation Clutch

ピンNo.	信号名
1	+24v－1
2	NC
3	NC
4	RECLON－N

㉕

・ECN10：IOD2－クリーナソレノイド
：IOD2－Cleaner Clutch

ピンNo.	信号名
1	+24v－1
2	NC
3	NC
4	FBSLON－N

㉖

・ECN8：IOD2－転写ソレノイド
：IOD2－Transfer Solenoid

ピンNo.	信号名
1	+24v－1
2	NC
3	NC
4	TRSLON－N

㉗

・ECN5：IOD2－給紙Uクラッチ
：IOD2－Paper Feeding Clutch

ピンNo.	信号名
1	+24v－1
2	NC
3	PKCLUON－N

㉘

・ECN12：IOD2－メインモータ
：IOD2－Main Motor

ピンNo.	信号名
1	MMRDY－N
2	MMON－N
3	MMCLK
4	PGND
5	+24v－1
6	SGND
7	+5v－1
8	MMENC
9	MMREV－N

㉙

・ECN15：IOD2－現像モータ
：IOD2－Developer Motor

ピンNo.	信号名
1	DMRDY－N
2	DMON－N
3	DMCLK
4	PGND
5	+24v－1
6	SGND
7	+5v－1
8	NC
9	DMREV－N

㉜

・ACN2：直流電源－ドアSW(高電流タイプ2ピン)
：Power Supply Unit－Interlock Switch(2Pins)

ピンNo.	信号名
1	DSW－O
2	DSW－I

㉛

・ACN3：直流電源－コントローラ電源(高電流タイプ4ピン)
：Power Supply Unit－MCTL

ピンNo.	信号名
1	+5v－2
2	+5v－2
3	SGND
4	SGND

㉝

・定着器(シグマ共用6ピン)－MCTL POCN
Fuser Unit－MCTL P.W.B POCN(6Pins)

ピンNo.	信号名
1	ACOUT－HP
2	FUCHKGND
3	TH2
4	ACOUT－HN
5	FUCHK
6	TH1

㉞

・BCN2：高圧基板－定着器(信号ハーネス4ピン)
：High Voltage Unit－Fuser Unit(4Pins)

ピンNo.	信号名
1	TH1
2	TH2
3	FUCHK
4	FUCHKGND

(30)

・LCN：MCTL－LDU(20ピン2列)
　　：MCTL－LDU(20Pins)

ピンNo.	信号名
1	+5v－R
2	LDREF2
3	LDREF3
4	+5v－1
5	LDREF1
6	LDREF0
7	LREADY
8	LCONT2
9	LCONT1
10	VIDEO－P
11	VIDEO－N
12	BDT－P
13	BDT－N
14	SGND
15	SGND
16	SCMCLK
17	SCMRDY－N
18	SCMON－N
19	PGND
20	+24v－1

(11)

・DCN8：IOD1－下給紙ユニット
：IOD1－Lower Feeder Unit

ピンNo.	信号名
1	+24v－1
2	NC
3	PKCLLON－N
4	NC
5	+5v－1
6	+5v－1
7	PEL－P
8	PSL1
9	SGND
10	PSL2
11	+5v－1
12	PSL3
13	OHPSENL
14	PSL4
15	SGND
16	SGND
17	OCST－N
18	NC

(11)-1

・LFUコネクタ
LFU Connector

ピンNo.	信号名
1	+24v－1
2	PKCLLON－N
3	+5v－1
4	PEL－P
5	SGND
6	+5v－1
7	OHPSENL
8	SGND
9	OCST－N
10	NC
11	NC
12	+5v－1
13	PSL1
14	PSL2
15	PSL3
16	PSL4
17	SGND
18	NC

(11)-2

PKCLL

ピンNo.	信号名
1	+24v－1
2	NC
3	PKCLLON－N

(11)-3

PSL

ピンNo.	信号名
1	+5v－1
2	PSL1
3	PSL2
4	PSL3
5	PSL4
6	SGND

(11)-4

PEL

ピンNo.	信号名
1	+5v－1
2	PEL－P
3	SGND

(11)-5

OHPL

ピンNo.	信号名
1	+5v－1
2	OHPSENL
3	SGND
4	OCST－N(SGND)

4.5.4 Connector Pin Layout of DUPL P.W.B

Duplex Print Control P.W.B - Connection of Printer Control P.W.B

(1). DPCN1 Connector (Molex): DUPL P.W.B - MCTL P.W.B

No.	Name of Signal	Function
1.	D_COMMAND	DUPL P.W.B Communication Command Signal
2.	SGND	Signal Ground
3.	DUMBUSY2-N	Duplex Unit Motor Rotation Signal 2
4.	SGND	Signal Ground
5.	D_STATUS	DUPL P.W.B Communication Status Signal
6.	SGND	Signal Ground
7.	+24VOFF	DUPL P.W.B
8.	DUPCHK-N	Duplex Unit Connection Sensor Signal
9.	DUMBUSY1-N	Duplex Unit Motor Rotation Signal 1
10.	PT-1	PT-1 Signal
11.	DURES-N	Duplex Unit P.W.B Reset Signal
12.	SGND	Signal Ground
13.	+5V-1	+5V-1
14.	SGND	Ground
15.	+24V-M	+24V (not through Door SW.)
16.	PGND(M)	Power Ground

(2). DPCN2 Connector (Molex): DUPL P.W.B - LVPS

No.	Name of Signal	Function
1.	+24V-1	+24V-1 Power Supply
2.	+24V-1	+24V-1 Power Supply

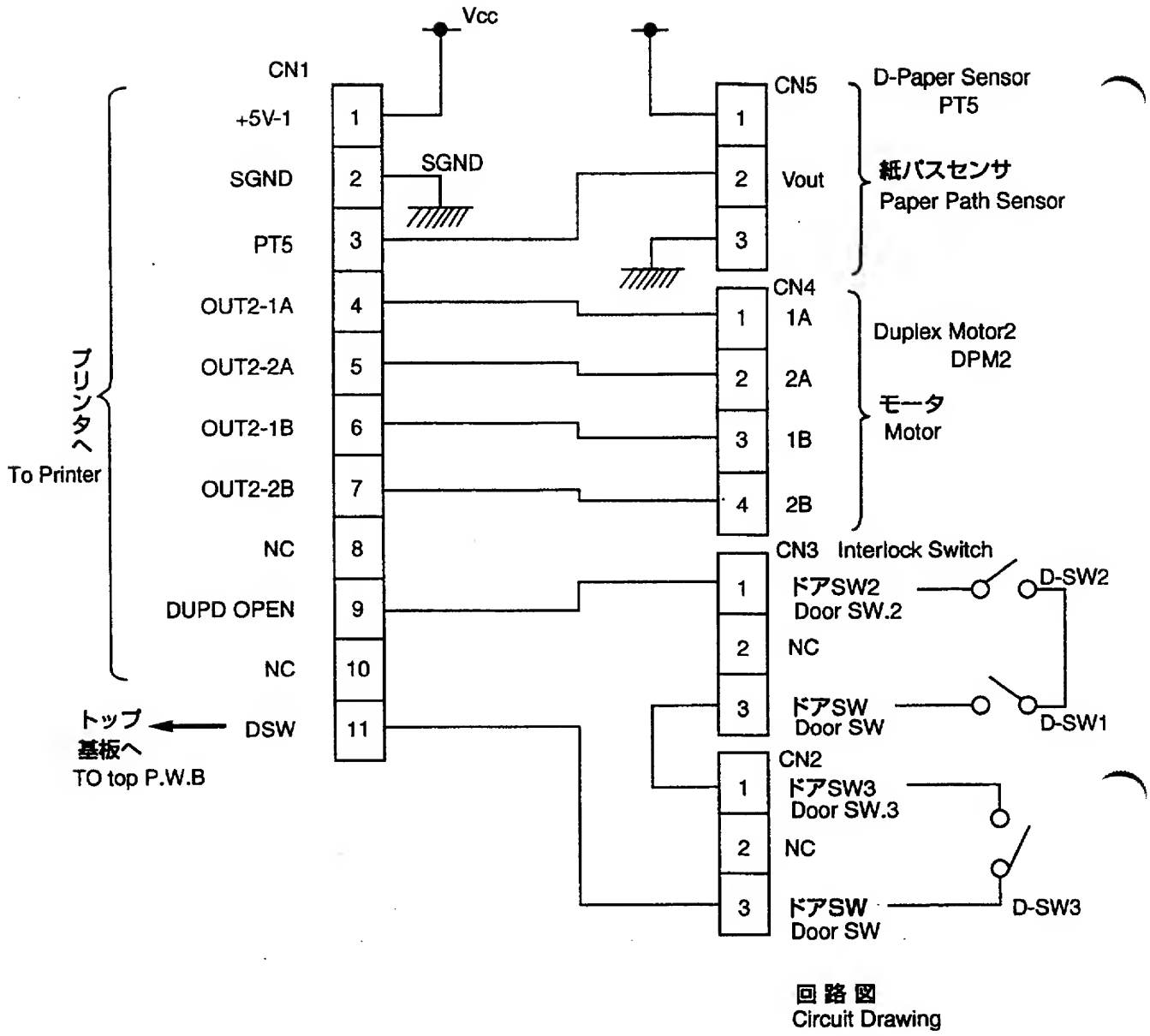
4.5.5 Duplex Print Control P.W.B - Connection of Print Relay P.W.B

(1). DPCN3 Connector (Molex): D-PCB-TAS CN1 / D-PCB-BAS CN1

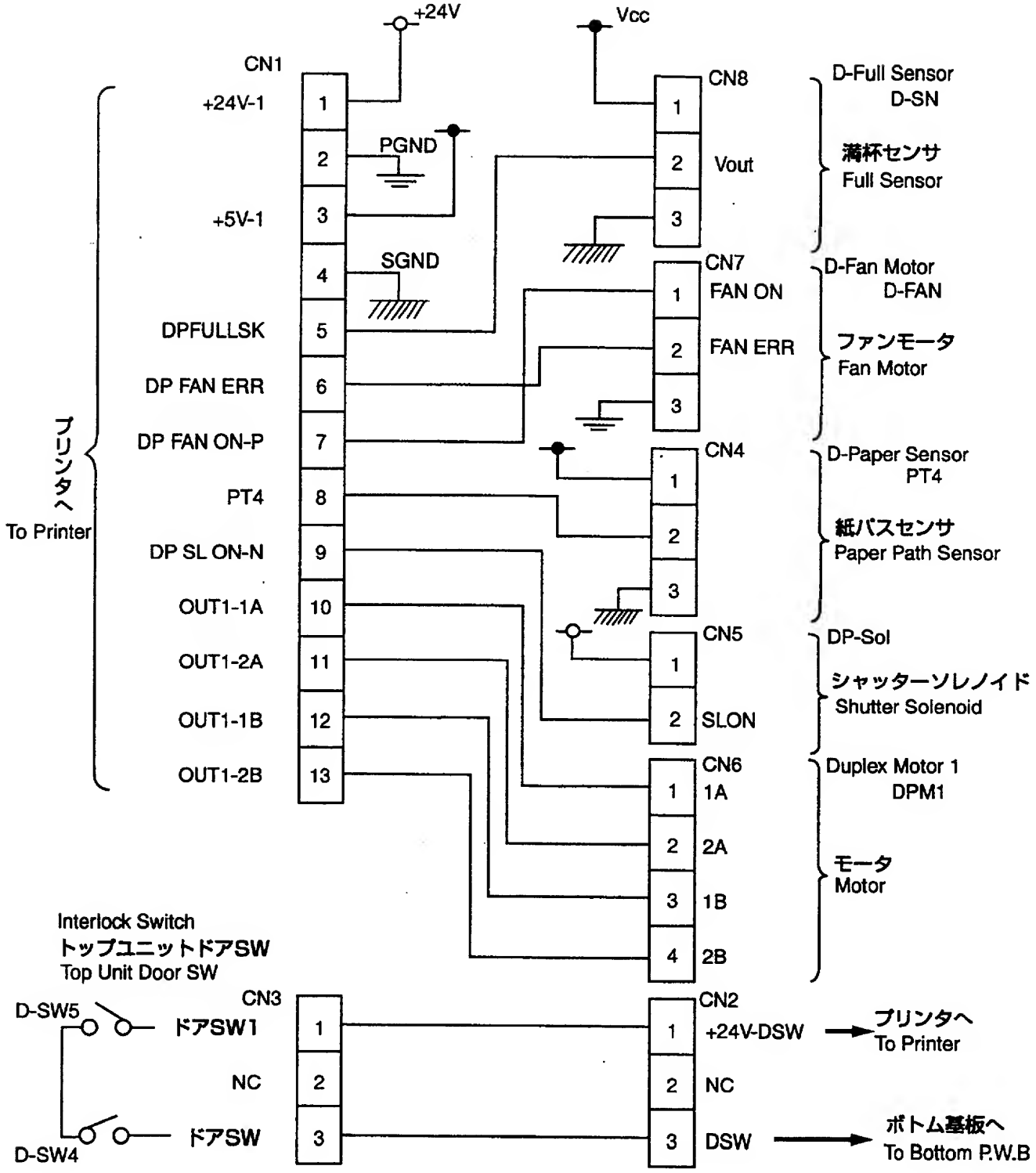
DPCN3 Pin No.	Name of Signal	D-PCB-ATS CN1 Pin No.	D-PCB-BTS CN1 Pin No.
1.	PGND	—	—
2.	+24V-1	1	—
3.	SGND	4	—
4.	+5V-1	3	—
5.	DPFANERR	6	—
6.	DPFULLSK	5	—
7.	PT-4	8	—
8.	DPFANON-P	7	—
9.	OUT1-1A	10	—
10.	DPSLON-N	9	—
11.	OUT1-1B	12	—
12.	OUT1-2A	11	—
13.	REVO1	—	—
14.	OUT1-2B	13	—
15.	+5V-1	—	1
16.	REVI1	—	—
17.	PT-5	—	3
18.	SGND	—	2
19.	OUT2-2A	—	5
20.	OUT2-1A	—	4
21.	OUT2-2B	—	7
22.	OUT2-1B	—	6

(2). DPCN4 Connector: D-PCB-TAS CN2 / D-PCB-BAS CN1

DPCN3 Pin No.	Name of Signal	D-PCB-ATS CN2 Pin No.	D-PCB-BTS CN1 Pin No.
1.	DUPDOPEN	—	9
2.	NC	—	—
3.	+24V-DSW	1	—



D-PCB-BAS: Connection of Print Relay P.W.B



D-PCB-TAS: Connection of Print Relay P.W.B

5. Periodical Maintenance

5.1 General 5-1

5.1.1 Handling Precaution 5-1

(1). List of Maintenance Tools 5-2

5.1.2 Periodical Maintenance of Each Part 5-3

5. Periodic Maintenance

5.1 General

5.1.1 Precaution in Handling

Since a high quality laser printer is a precision equipment, the daily checking and periodic maintenance is indispensable to maintain an expected hig performance.

Following is the list of important precautions & action items as to the maintenance and periodic replacement parts:

(1). Refrain from any operation, disassembly, and modification that are not set out in this manual.

(2). When assembling or disassembling the printer, turn the power supply off at first and unplug the power supply cord prior to commencing any work.

(3). Whenever having replaced any parts, confirm the replaced parts in place prior to driving the printer.

(4). Read carefully and understand well any precaution or warning labels affixed to any parts.

(5). Unless otherwise specified, precisely follow the reverse order of the disassembly procedures for the re-assembly. Do not get confused with the kind of removed screws and also length.

(6). Do not use any solvent for cleaning, no matter inside or outside of printer.

(7). It is strictly forbidden to dump the waste toner together with flammable substances or throw it into the fire. This is a very important caution to be respected.

(1). List of Maintenance Tools

①. For the list of maintenance tools for the printer, see the maintenance manual of Hitachi Color Laser Printer Model SL1.

②. Table 5-1 shows the maintenance tools specifically for the duplex printing unit.

Table 5-1

No.	Tool Name	Use
1	Phillips Screwdriver #1	For M3 Screw
2	Phillips Screwdriver #2	For M4 Screw
3	Phillips Screwdriver (minor axis) #1	For M3 Screw
4	E Ring Pliers	For Installation of E Ring
5	Tweezers (Pincette)	For Detachment of Leaf Spring
6	Long-Nose Pliers	For Installation of E Ring For General Use

5.1.2 Periodic Maintenance of Each Part

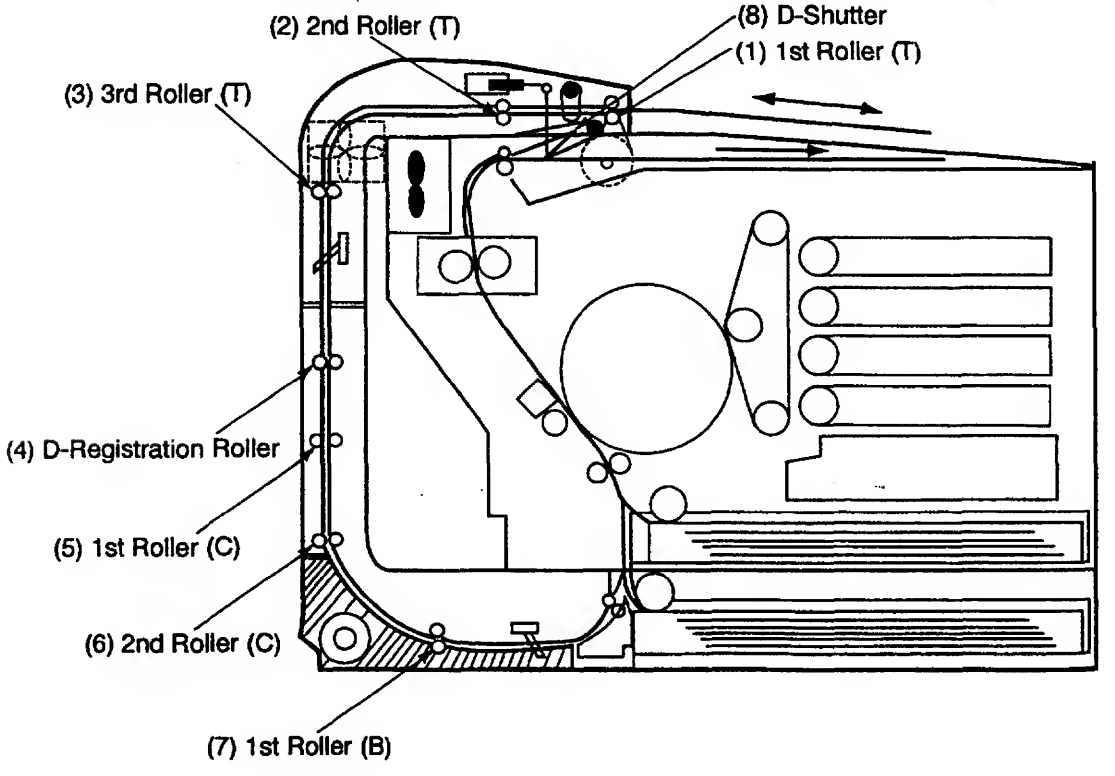
(1). Periodic Cleaning

• No specific cleaning cycle is determined, but cleaning is required whenever paper stain is found.

No.	Part Name	Procedure of Work	Illust. #	Cleaning Cycle	Required Time	Skill Level A ~ C
1	1st Roller (T) 2nd Roller (T) 3rd Roller (T)	①. Open D-top cover. ②. Using dry cloth, clean roller and perimeter.	(1) (2) (3)	• Paper stain • Periodic cleaning.	2 min.	A to B or User.
2	D-Registration Roller 1st Roller (C) 2nd Roller (C)	①. Open D-center cover. ②. Using dry cloth, clean roller and perimeter.	(4) (5) (6)	• Paper stain • Periodic cleaning.	2 min.	A to B or User.
3	1st Roller (B)	①. Pull out D-bottom cover M. ②. Using dry cloth, clean roller and perimeter.	(7)	• Paper stain • Periodic cleaning.	1 min.	A to B or User.
4	D-Shutter	①. Open D-top cover. ②. Using dry cloth, clean paper run guide face.	(8)	• Paper stain • Periodic cleaning.	2 min.	A to B or User.

⚠ Caution

• Prior to starting the maintenance work, make sure to unplug the power cord from the outlet; Otherwise you may get an electric shock.



6. Operation & Adjustment of Operator Panel

6.1 Layout of Operator Panel 6-1

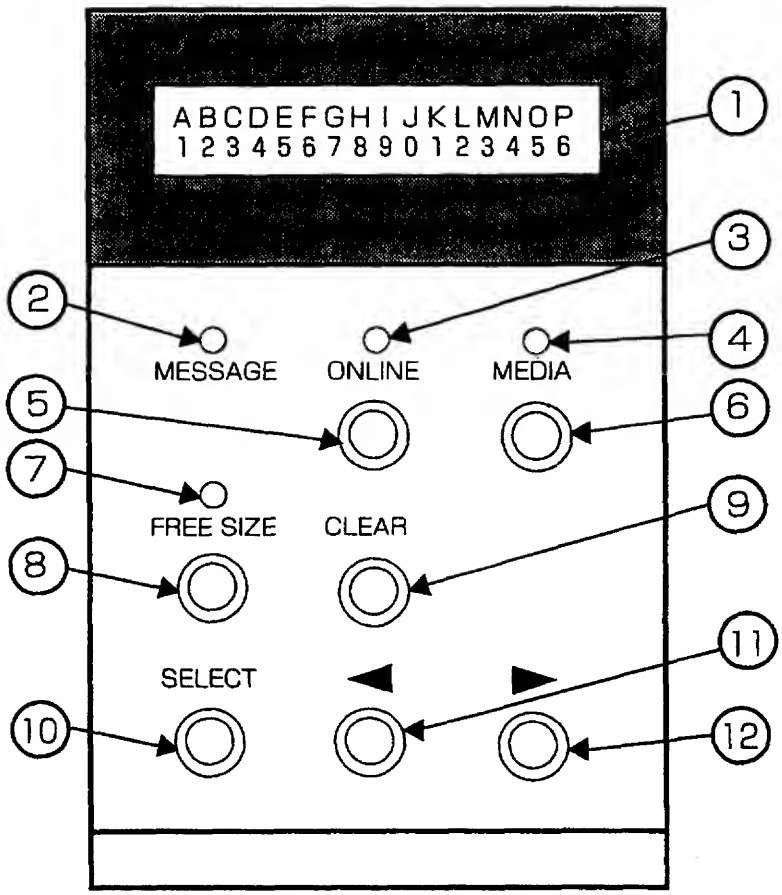
6.2 Construction of Operator Mode 6-2

6.3 Operation of Normal Mode 6-2

6.4 Service Mode 6-10

6. Operation and Adjustment of Operator Panel

6.1 Panel Layout



Description:

①	LCD:16 characters by 2 lines
②	Message LED
③	Online LED
④	Media LED
⑤	Online Key
⑥	Media Select Key
⑦	Free Size LED (Red)
⑧	Free Size Key
⑨	Clear Key
⑩	Select Key
⑪	Scroll Key (Left)
⑫	Scroll Key (Right)

6.2 Construction of Operator Mode

This printer has the functions listed in the table 6-1 so that the printer engine operation status is easily checked at the maintenance work. Additional functions provided for the duplex printer ai asterisked in the table 6-1.

(1). Normal Mode : To provide the message indication function as to the drive status and the normal operation for which the operator is responsible.

(2). Service Mode : To provide the functions (code 31 ~ 37) at the maintenance work for confirmation of drive status, and also 39 FACTORY MODE function for confirmation of operation of main component . This is the maintenance mode for the serviceman only.

6.3 Operation of Normal Mode

This normal mode indicates on the operator panel the drive status at the ONLINE connection drive, and also the information which an operator requires for the normal maintenance work.

Drive Procedures

(1). Push on the power supply switch.
(2). ONLINE lamp is lit and the message lamp blinks.
(3). Message lamp is lit off approximately 210 seconds after switching on the power supply, and then the printer is ready to print as READY status.

Normal Mode

See the table 6-2 for details on the indication of message in the normal mode.

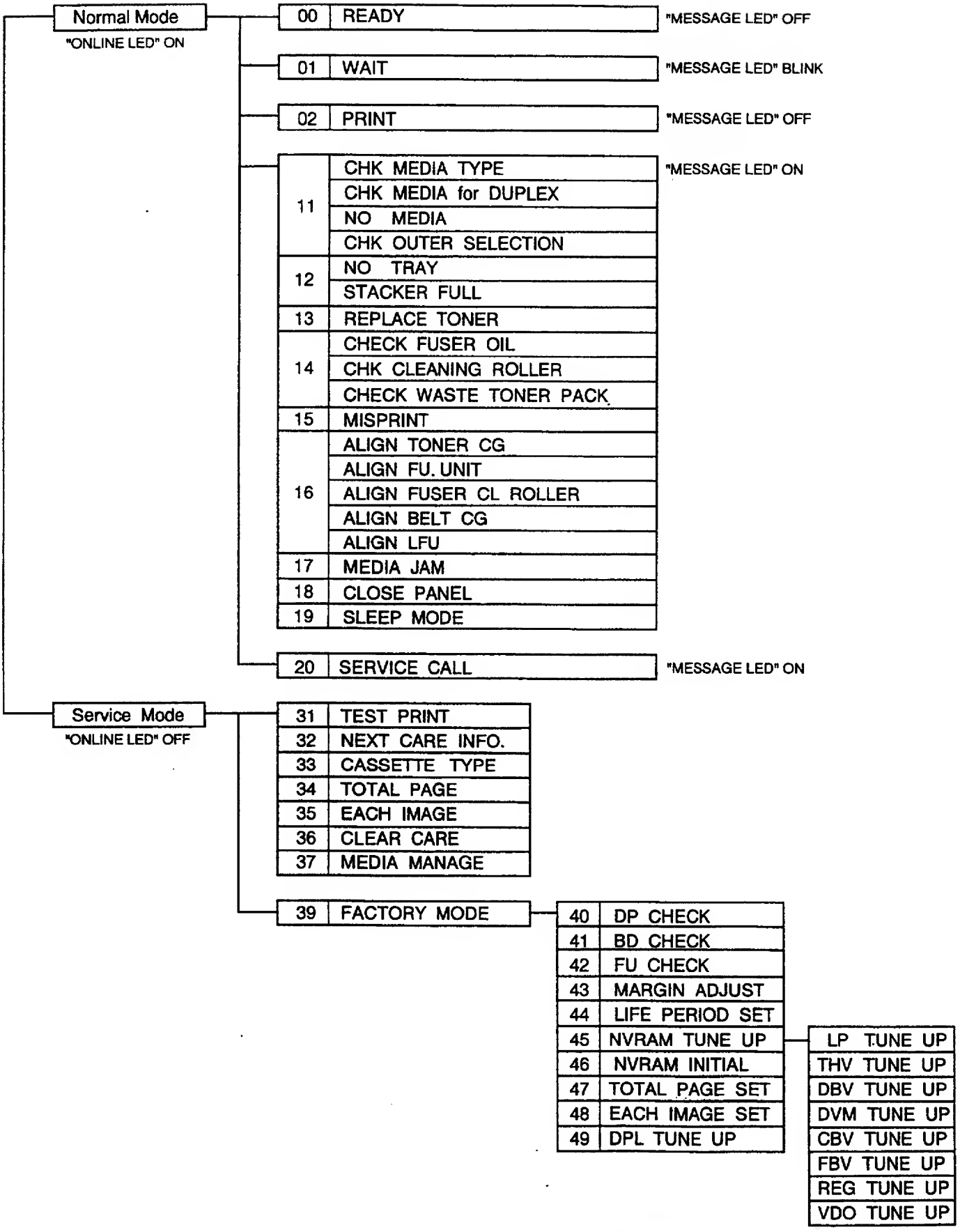


Table 6-1 : Construction of Operator Modes

Code No.	Message in LCD	Description of Message
00	00 READY [*1] U : [*2] L : [*3][*4]	• READY LED is lit • Engine has completed the warming-up process and now is ready to print. • Engine is ready to receive "PRREQ", "TPREQ" signal from LPC. [*1] : Applicable paper feeder is indicated as follows: /UPP...Upper Cassette /LOW...Lower Cassette [*2] and [*3] : Size of the paper loaded on the upper or lower cassette is indicated as follows: LT...Letter size DL...Envelope EX...Executive size PC...Post Card LG...Legal size CM...Envelope Commercial #10 A4... A4 size FR...Free size B5...B5 size UK...UK Quarto FO...OHP [*4] : Code numbers of the consumables or periodical replacement parts will be indicated if they reach to their life or should be replaced now. If no periodical replacement is required, there will be no indication in the LCD. For details of the periodical replacement parts, see the item6.1.4, 36 CLEAR CARE .
01	01 WAIT [*1] U : [*2] L : [*3][*4]	• Message LED is lit. • Engine is in the process of warming-up. • For [*1], [*2], [*3] and [*4] appearing in the LCD, see the description of code number 00 above.

Code No.	Message in LCD	Description of Message
02	02 PRINT [*5][*1] U : [*2] L : [*3][*4]	• Message LED is lit. • Engine is ready to print. • For [*1], [*2], [*3] and [*4] appearing in the LCD, see the description of code number 00 above. [*5] : Print color is indicated as follows: Y ...Yellow M ...Magenta C ...Cyan K ...Black YM ...Yellow & Magenta YMCK ...Full Color
11-1	11 CHK MEDIA [*1] TYPE [*4] NO MEDIA UPP/LOW CHK MEDIA TYPE UPP/LOW * CHK OUTER SELECTION * CHK MEDIA for DUPLEX	• Engine is idling. • Message LED is lit. [*1] : Applicable paper feeder is indicated as follows: /UPP ...Upper Cassette /LOW...Lower Cassette /DPL... Duplex Unit Inside • Confirm whether applicable paper cassette is loaded with papers. • Press Media Key if media shall be changed.
11-2	NO MEDIA 11 NO MEDIA [*1] [*4]	• Engine is idling. • Message LED is lit. [*1] : Applicable paper feeder of paper empty condition is indicated as follows: /UPP...Upper Cassette /LOW...Lower Cassette /DPL... Duplex Unit Inside • Replenish the empty cassette with papers.
11-3	11 CHK MEDIA [*1] for DUPLEX [*4]	• Engine stands by a CHECK MEDIA Duplex. • Message LED is lit. [*1] : Media check is indicated with the following messages for each feeder. /UPP...Upper Cassette /LOW...Lower Cassette /DPL... Duplex Unit Inside • Changes the applicable media. • Changes the designation of media.

Code No.	Message in LCD	Description of Message
11-4	11 CHK OUTER [*1] SELECTION [*4]	• Engine stands by a CHECK OUTER SELECTION. • Message LED is lit. [*1] : Media check is indicated with the following messages for each feeder. /UPP...Upper Cassette /LOW...Lower Cassette • Confirm the paper cassette/paper exit tary, and reset properly.
12-1	NO TRAY UPP/LOW 12 NO TRAY [*1] [*4]	• Engine is idling. • Message LED is lit. [*1] : Paper feeder without the paper cassette is indicated as follows: UPPER...Upper Cassette LOWER...Lower Cassette • Install the applicable paper cassette to the paper feeder indicated in the LCD.
12-2	12 STACKER [*1] FULL [*4]	• Engine stands by as "STACKER FULL" status. • Message LED is lit. • Remove the paper on the stacker (paper exit tray), and then press "CLEAR" key.
13	REPLACE TONER 13 REPLACE [*5] TONER [*4] *Display of [4] C:YT Y Toner Cartridge C:CT C Toner Cartridge C:MT M Toner Cartridge C:KT K Toner Cartridge	• Engine is idling. • Message LED is lit. [*5] : Toner empty condition is indicated by the color code as follows: Y...Yellow M...Magenta C...Cyan K...Black • Replace the indicated toner cartridge with a new toner cartridge of subject color.
14-1	CHECK FUSER OIL 14 CHECK FUSER OIL [*F0]	• Engine is idling. • Message LED is lit. • Replace the fuser oil bottle with a new bottle. • This message will be automatically cleared by open & close operation of the paper exit cover.
14-2	14 CHK CLEANING ROLLER [*4] [*FC]	• Engine is idling. • Message LED is lit. • Replace the cleaning roller with a new roller. • Execute the Clear Care Mode after the replacement of the cleaning roller to clear the Care Code [FC].

Code No.	Message in LCD	Description of Message
14-3	CHECK WASTE TONER PACK 14 CHECK TONER PACK [*4]	• Engine is idling. • Message LED is lit. • Replace the waste toner pack with a new pack. • This message will be automatically cleared by open & close operation of the paper exit cover taking place while replacement of the waste toner pack. The message is cleared also by pressing the Clear Key.
15	MISPRINT 15 MISPRINT [*6] [*4]	• Engine is idling. • Message LED is lit. [*6] : Kind of the misprint will be indicated as follows: NOPQR...No PRREQ-N signal is a vailable. PAPER ...No paper is available in the feeder while executing the print operation after receipt of the print command. MEDIA... While executing the print process after receipt of print command, the media type of feeder is not consistent with the specified media type. • This message can be cleared by pressing the Clear Key.
16-1	16 ALIGN FU.UNIT [*4]	• Engine is standstill. • Message LED is lit. • Fuser unit is not installed. Reconfirm the installation status of the fuser unit. • This message will be automatically cleared by open & close operation of the paper exit cover. The message is cleared also by pressing the Clear Key.
16-2	ALIGN FUSER CL ROLLER 16 ALIGN FUSER CL ROLLER [*4]	• Engine is idling. • Message LED is lit. • Cleaning roller is not installed. Reconfirm the installation status of the cleaning roller. • This message will be automatically cleared by open & close operation of the paper exit cover. The message is cleared also by pressing the Clear Key.

Code No.	Message in LCD	Description of Message
16-3	ALIGN TONER CG 16 ALIGN [*5] TONER CG [*4]	• Engine is idling. • Message LED is lit. [*5] : Color of the incorrectly installed toner cartridge will be indicated as follows: Y...Yellow M...Magenta C...Cyan K...Black • Reinstall the toner cartridge correctly. • This message will be automatically cleared by open & close operation of the front cover.
16-4 *	16 ALIGN BELT CG [*4] ALIGN LFU	• Engine is standstill. • Message LED is lit. • Belt cartridge is not installed. Reconfirm the installation status of the belt cartridge. • This message will be automatically cleared by open & close operation of the paper exit cover or front cover.
16-5	16 ALIGN LFU [*4]	• Engine stands by as "ALIGN LFU" status. • Turn the power off, and then connect the harness between the engine and LFU. • Turn the power on. If the warming-up process starts, it means that proper connection is made.
17	PAPER JAM 17 PAPER JAM [*7] [*4]	• Engine is standstill. • Message LED is lit. [*7] : Kind of jam (location of jam) is indicated as follows: FEED ...Paper Feeder INNER ...Inside of Printer OUTER...Paper Exit DRUM ...Transfer Drum DPL ... Jam inside the duplex unit. • This message will be cleared by pressing the Clear Key after open & close operation of the front cover, back cover and paper exit cover.

Code No.	Message in LCD	Description of Message
18	CLOSE PANEL 18 CLOSE PANEL [*8] [*4]	• Engine halts as "CLOSE PANEL" status. • Message LED is lit. [*8]: One of following messages appears to indicate the kind of cover being open. FRONT...Front Cover TOP .....Paper Exit Cover REAR ... Rear Cover DPL..... Rear Cover • Close the indicated cover, and then above message is cleared.
19	SLEEP MODE 19 SLEEP MODE [*4]	• Engine is idling. • Message LED is lit. • This mode is cleared by sending WAKE-UP command (EC24) from LPC. • Printer is ready to print after the warming-up process of engine.
20	SERVICE CALL 20 SERVICE CALL [*9]	• Engine is standstill. • Message LED is lit. [*9] : Service Call error code is indicated as follows: For the details of error codes, refer to the Section 8 "Troubleshoot" of this manual.

6.4 Service Mode

This service mode provides the function to check the drive status of printer engine alone at holding the printer as OFFLINE by the maintenance unique mode, as well as maintenance of engine components. Newly added functions for duplex printing are listed in the table 6-1. Operation Procedures of above additional functions is explained as follows:

> **⚠ Attention**
>
> For the operation of basic functions, see the maintenance manual, subchapter 6.4 of Hitachi Color Laser Printer Model SL1.

Procedures

(1). Pressing the following three keys on the operator panel, push on the power supply switch: Scroll key (left) ◁ , (right) ▷ , and Select key.

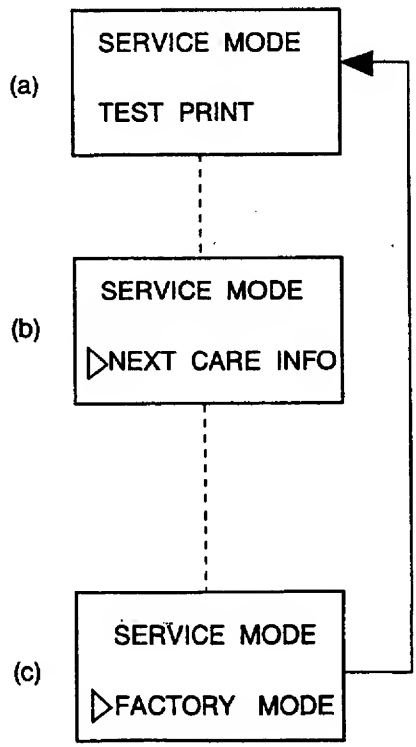
(2). Manipulating the Scroll key, Select key and Clear key, choose the mode necessary for maintenance work from the construction shown in the table 6-1.

Procedures of Mode Designation

(1). Pressing the scroll key, you can select one of service modes (a), (b) and (c).

(2). After selecting the desired mode, press the select key for the execution.

(3). Press the clear key if you wish to cancel the present mode.



7. Replacement Procedure of Maintenance Parts

7.1 Replacement of Duplex Print Unit 7-3
7.1.1 D-Top Cover Unit 7-3
7.1.2 D-Center Cover Unit 7-4

7.2 Replacement of Covers 7-6
7.2.1 D-Top Cover (R), D-Top Cover (L) and D-Top Cover 7-6
7.2.2 D-Switch Cover (R) and D-Switch Cover (L) 7-8
7.2.3 D-Bottom Cover (R), D-Bottom Cover (L) and D-Center Cover 7-9
7.2.4 D-Bottom Cover M 7-11
7.2.5 D-Motor Cover 7-12

7.3 Motor and Solenoid 7-13
7.3.1 DPM1 Motor 7-13
7.3.2 DPM2 Motor (Lower) 7-14
7.3.3 D-Fan Motor 7-15
7.3.4 Solenoid 7-16

7.4 Replacement of Print P.W.B 7-17
7.4.1 DUPL P.W.B 7-17
7.4.2 Relay P.W.B [D-PCB-TAS] 7-18
7.4.3 Relay P.W.B [D-PCB-BAS] 7-19

7.5 Switch and Sensor 7-20
7.5.1 Interlock Switch (D-SW1, D-SW2) 7-20
7.5.2 Interlock Switch (D-SW3) 7-21
7.5.3 Interlock Switch (D-SW4, D-SW5) 7-22
7.5.4 Exit Paper Full Sensor (DP-SN) 7-24
7.5.5 Paper Sensor (PT5) 7-25
7.5.6 Paper Sensor (PT4) 7-26

7.6 Roller 7-27
7.6.1 1st Roller (T) [D-RT1] 7-27
7.6.2 2nd Roller (T) [D-RT2] 7-28
7.6.3 3rd Roller (T) [D-RT3] 7-29
7.6.4 1st Roller (C) [D-RC1] 7-30
7.6.5 2nd Roller (C) [D-RC1] 7-31
7.6.6 D-Registration Roller [D-RR] 7-32
7.6.7 1st Roller (B) [D-RB1] 7-33
7.6.8 2nd Roller (B) [D-RB2] 7-34

7.7 Guide and Others 7-35
7.7.1 D-Shutter AS 7-35

7. Replacement Procedure of Maintenance Parts

Respect the procedures and precautions described below for the maintenance work.

(1). Do not implement any operation, disassembly, and modification etc., which are not set out in this Manual.

(2). Turn the power supply OFF and unplug the power supply cable from the outlet prior to starting the disassembly or check.

(3). This printer incorporates the dangerous parts subject to the warnings such as "High Temperature", "High Voltage", and "Laser Radiation". Prior to starting any work to this printer, make sure to read and understand the warnings set out in this Manual.

(4). Collect and dispose the waste toner or toner cartridge in this maintenance. However, strictly refrain from dumping them together with the inflammable or throwing them into the fire.

(5). Remove the grounding when replacing or removing DC power supply unit. After completing the replacement work, confirm the grounding wire to be put back and connected to the earth mark ⏚.

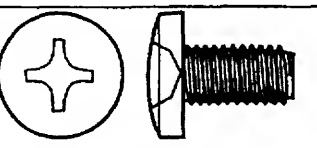
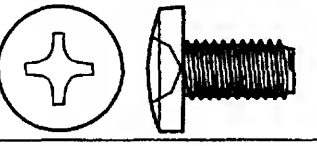
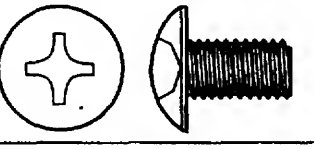
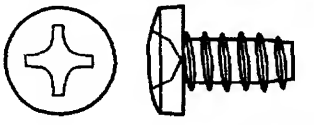
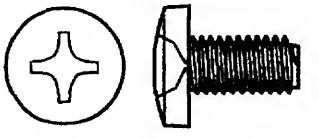
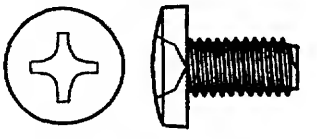
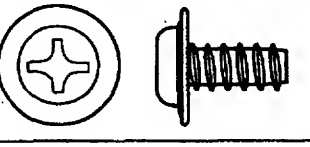
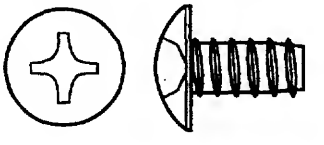
(6). Confirm the direction of parts and length of screws in replacement work of the maintenance parts. (See Table 7-1.)

(7). Do not use any solvent such as alcohol for the maintenance of this printer.

(8). Confirm all the parts and covers installed or assembled properly prior to starting the test run after replacement of the maintenance parts.

See Chapter 8 "Troubleshooting" and 9 "List of Maintenance Parts" for reference.

Table 7-1: Table of Applicable Screws for Duplex Print Unit

No.	Class Code	Name of Screw	Size and Shape of Screw		Remarks
			Length	Sharp	
1.	ST3X5	S Tight Screw	3X5		For P.W.B. and Motor.
2.	ST3X14		3X14		For Switch and Stopper Band.
3.	TM4X8	Truss Machine Screw	4X8		For Top Cover.
4.	BT3X8	Cross Recessed Head Tapping Screw.	3X8		For P.W.B. and Stopper Band.
5.	ST3X8	S Tight Screw	3X8		For Sheet Metal
6.	M4X30	Cross Recessed Head Tapping Screw. (Pan Head)	4X30		For Fan
7.	FT3X10	Flat Head Tapping Screw	3X10		For Plastic
8.	BT4X10	Cross Recessed Head Tapping Screw.	4X10		For Bottom Cover.

7.1 Replacement of Duplex Print Unit

7.1.1 D-Top Cover Unit

Tools

① Phillips Screwdriver #1

Procedures of Disassembly

① Open the D-center cover.
② Remove the harness clamp of D-connector (D-CN1).
③ Disconnect the connection of D-connector (D-CN1).
④ Open the D-center cover.
⑤ Remove the screws (ST3×6: 4 pcs.) fixing the D-top cover unit.
⑥ Remove the D-top cover unit from the printer engine.

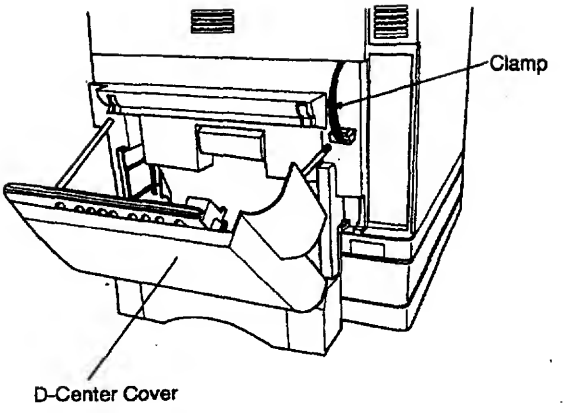


Fig.7-1

Procedures of Assembly

① Prepare new D-top cover unit.
② Put the D-top cover unit on the printer engine.
③ Fix the D-top cover unit with the screws (ST3 6: 4 pcs.).
④ From here and onward, follow the reversed sequences of disassembly procedures above.

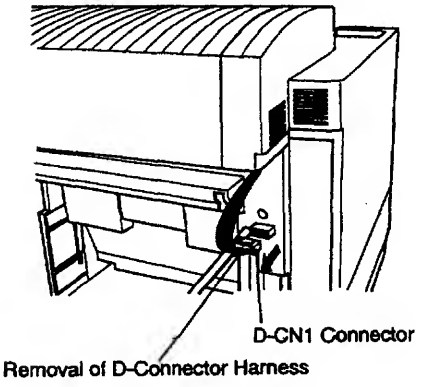


Fig.7-2

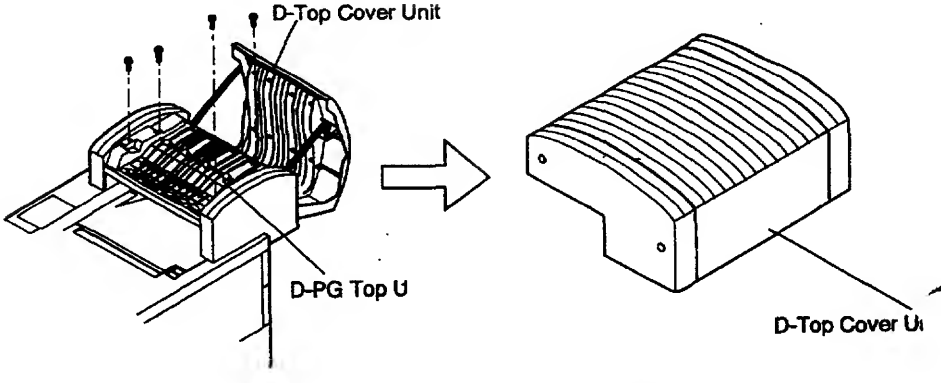


Fig.7-3

7.1.2 D-Center Cover Unit

Tools

①. Phillips Screwdriver #1

Procedures of Disassembly

①. Remove the LFU side cover (L).
- (A direction first and then B direction)

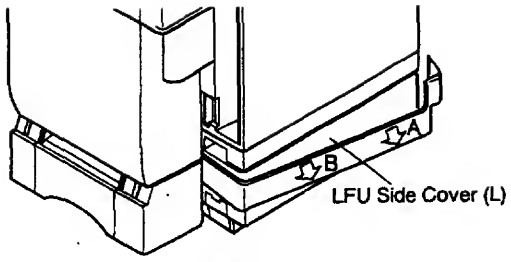


Fig.7-4

②. Remove the connector (D-CN2) of duplex harness from the LFU.

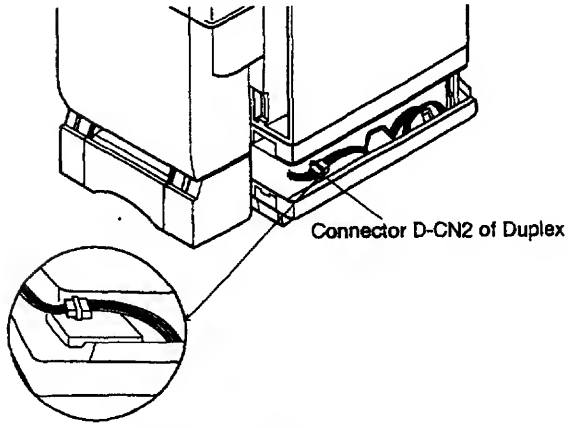


Fig.7-5

③. Open the D-center cover.
④. Remove the harness clamp of D-connector (D-CN1).

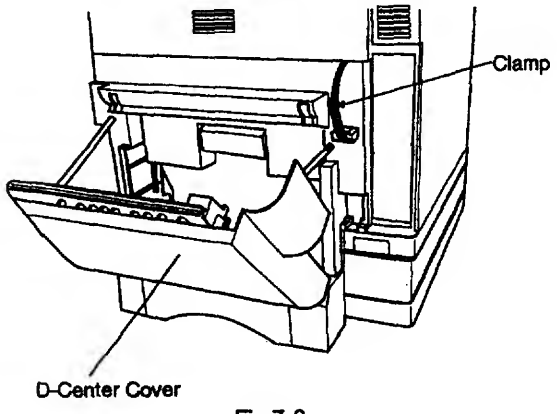


Fig.7-6

⑤. Disconnect the connection of D-connector (D-CN1).

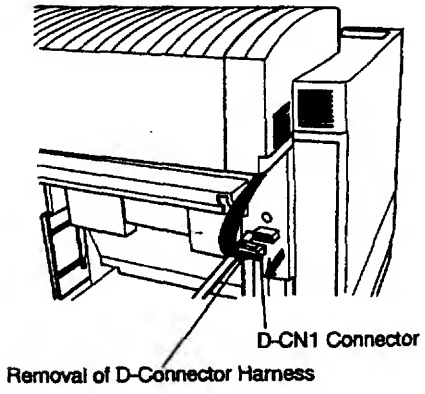


Fig.7-6

⑥. Remove the fixing screws (BT3 × 6: 4 pcs.) of the D-center cover unit.

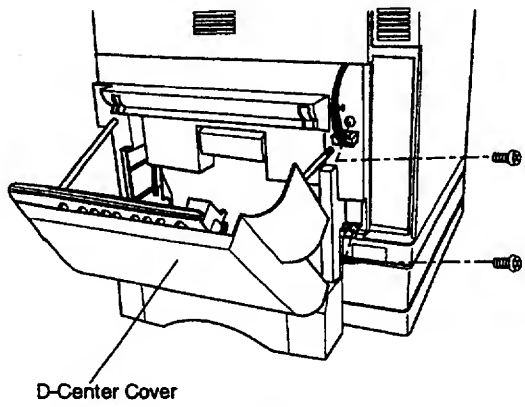


Fig.7-8

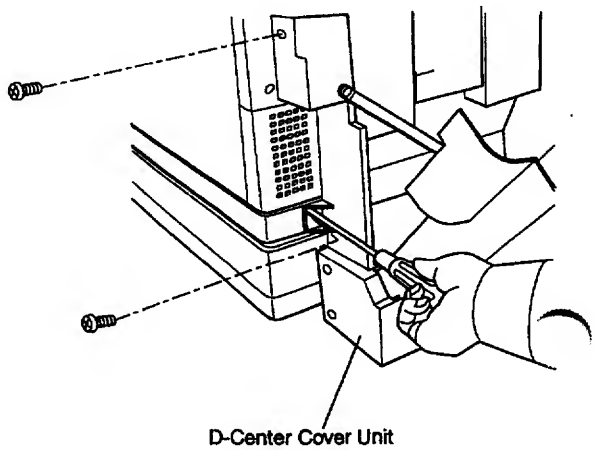


Fig.7-9

⑦. Remove the D-center cover unit from the printer engine.

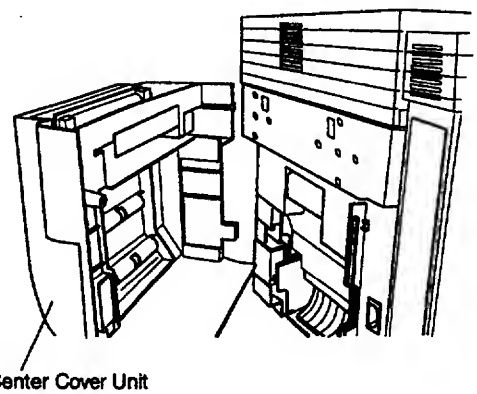


Fig.7-10

Procedures of Assembly

①. Prepare new D-center cover unit.
②. Install the D-center cover unit to the printer engine.
③. From here and onward, follow the reversed sequences of disassembly D-Center Cover procedure above.

7.2 Replacement of Covers

7.2.1 D-Top Cover (R), D-Top Cover (L), and D-Top Cover

Tools

① Phillips Screwdriver #2

Procedures of Disassembly

① Remove the fixing screws (M4×8: 2 pcs.) of D-top cover (R), and then remove the D-top cover (R).

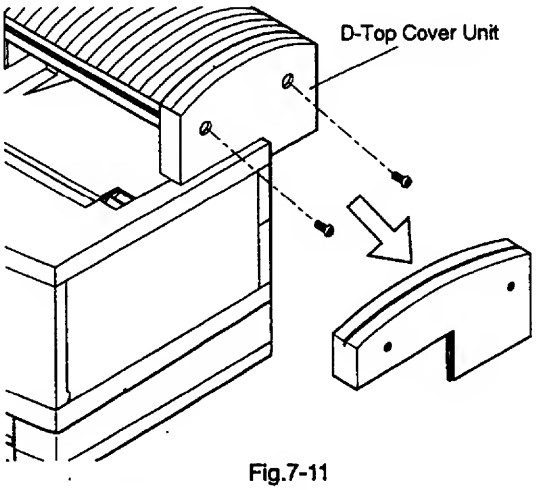


Fig.7-11

②Remove the fixing screws (M4×8: 2 pcs.) of D-top cover (L), and then remove the D-top cover (L).

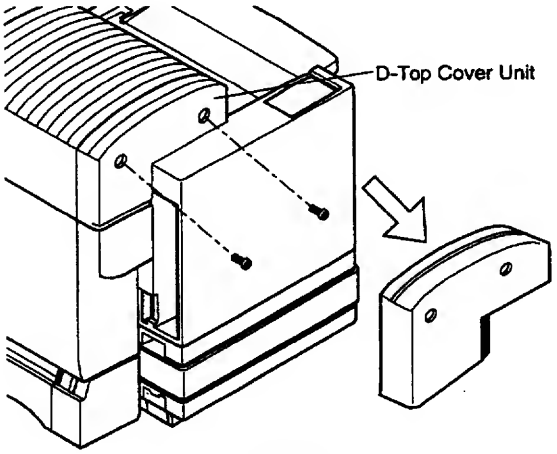


Fig.7-12

③ Remove the fixing screws (BT3×8: 2 pcs.) of stopper band for D-top cover, bend the recessed part provided at the rotation fulcrum of D-top cover, and then remove the D-top cover from D-Top Cover Unit the rotation shaft.

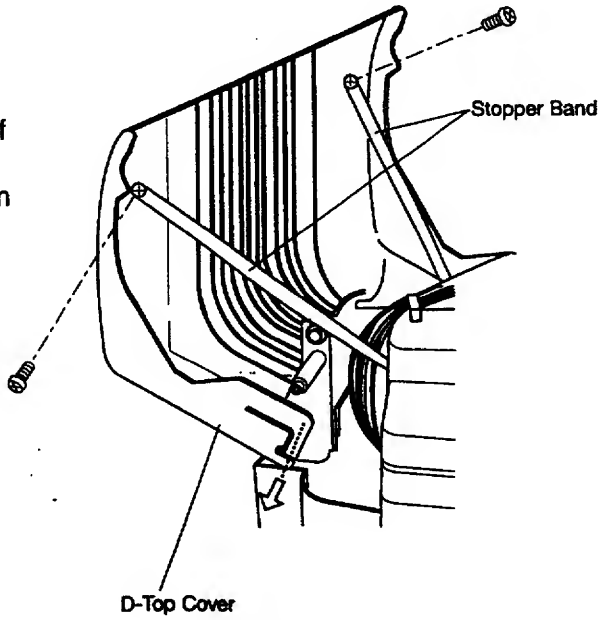


Fig.7-13

④. Remove the rollers (12 pcs.).
⑤. Using a pair of tweezers, remove the D-leaf spring A (8 pcs.) and B (4 pcs.) in the D-top cover.

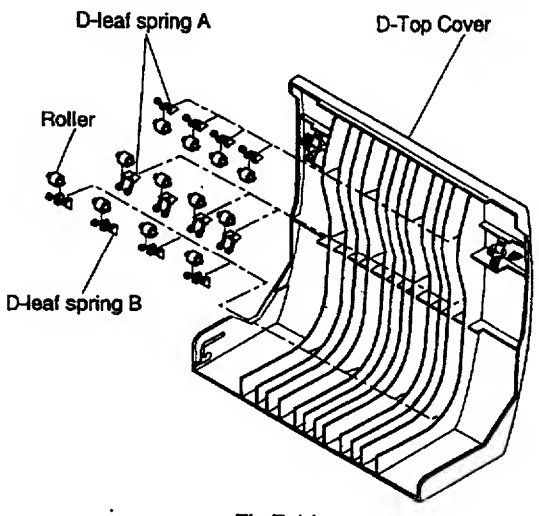


Fig.7-14

Procedures of Assembly

①. Install the D-leaf spring A (8 pcs.), B (4 pcs.), and the rollers (12 pcs.) to new D-top cover.
②. From here and onward, follow the reversed sequences of disassembly procedures above.

7.2.2 D-Switch Cover (R) and D-Switch Cover (L)

Tools

① Phillips Screwdriver #2

Procedures of Disassembly

① Remove the D-top cover (R) and D-top cover (L) according to the procedures of Item 7.2.1 above.

② Pressing the 'A' part of D-switch cover (R) and (L), lift up the D-switch cover (R) and (L) to the arrow direction, and then remove the D-switch cover (R) and D-switch cover (L)

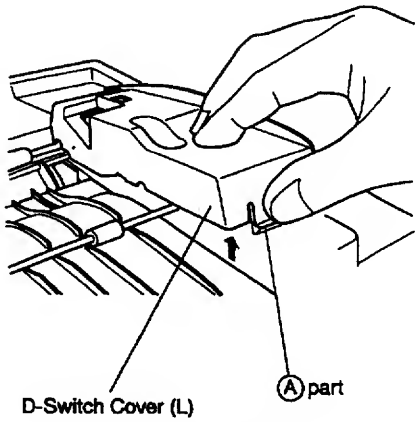


Fig.7-15

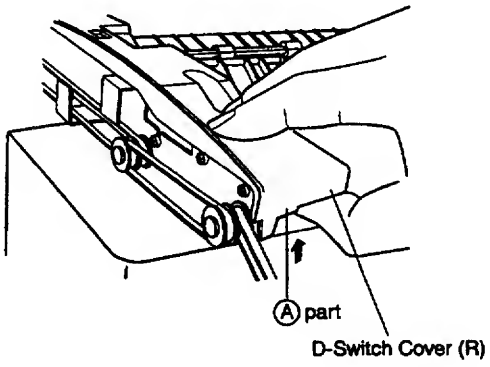


Fig.7-16

Procedures of Assembly

① Assemble new D-top cover (R) and new D-top cover (L) according to the reverse sequences of disassembly procedures above.

7.2.3 D-Bottom Cover (R), D-Bottom Cover (L), and D-Center Cover

Tools

① Phillips Screwdriver #1 and #2

Procedures of Disassembly

① Remove the fixing screws (BT4×10: 2 pcs.) of D-bottom cover (R), and then remove the D-bottom cover (R).

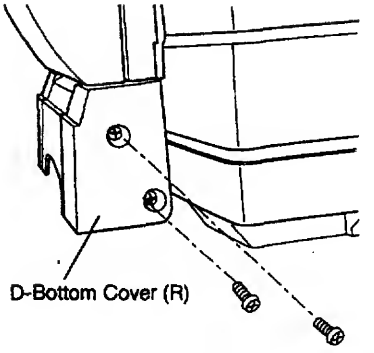


Fig.7-17

② Remove the fixing screws (BT4×10: 2 pcs.) of D-bottom cover (L), and then remove the D-bottom cover (L).
③ Remove the fixing screws (BT3×8: 2 pcs.) of of stopper band for D-center cover.
④ Bend and move the rotation fulcrum of D-center cover to the axis direction, and then remove the D-center cover. (See the figure 7-20.)

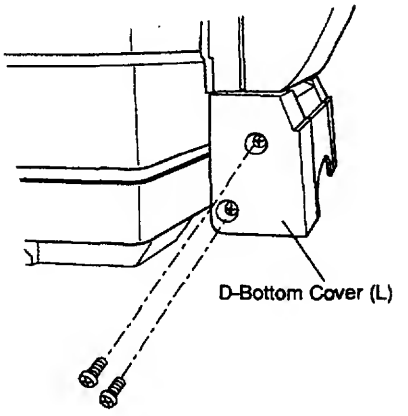


Fig.7-18

⑤ Remove the fixing screws (BT3×8: 2 pcs.) of D-PG center stopper, and then remove the D-PG center stopper.

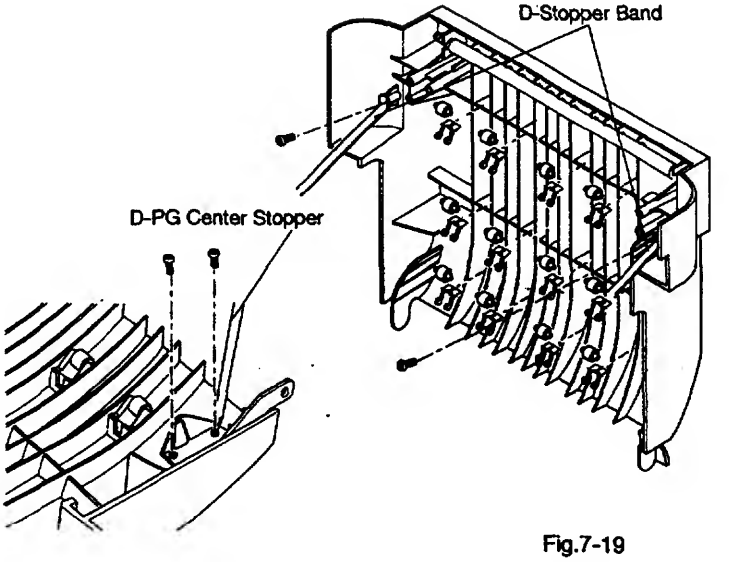


Fig.7-19

⑥. Remove 3 pieces of the D-stop rings and move 2 pieces of D-D-bearing to the axis direction. After this removal, remove the D-registration spring (2 pcs.), D-D-bearing (2 pcs.) and D-registration roller.
⑦. Remove the fixing screws (BT3×8: 4 pcs.) of roller catch strikers (2 pcs.).
⑧. Remove the rollers (8 pcs.).
⑨. Using a pair of tweezers, remove the D-leaf spring 'A' (8 pcs.).

Procedures of Assembly

①. Prepare and assemble new D-center cover according to the reverse sequences of disassembly procedures above.

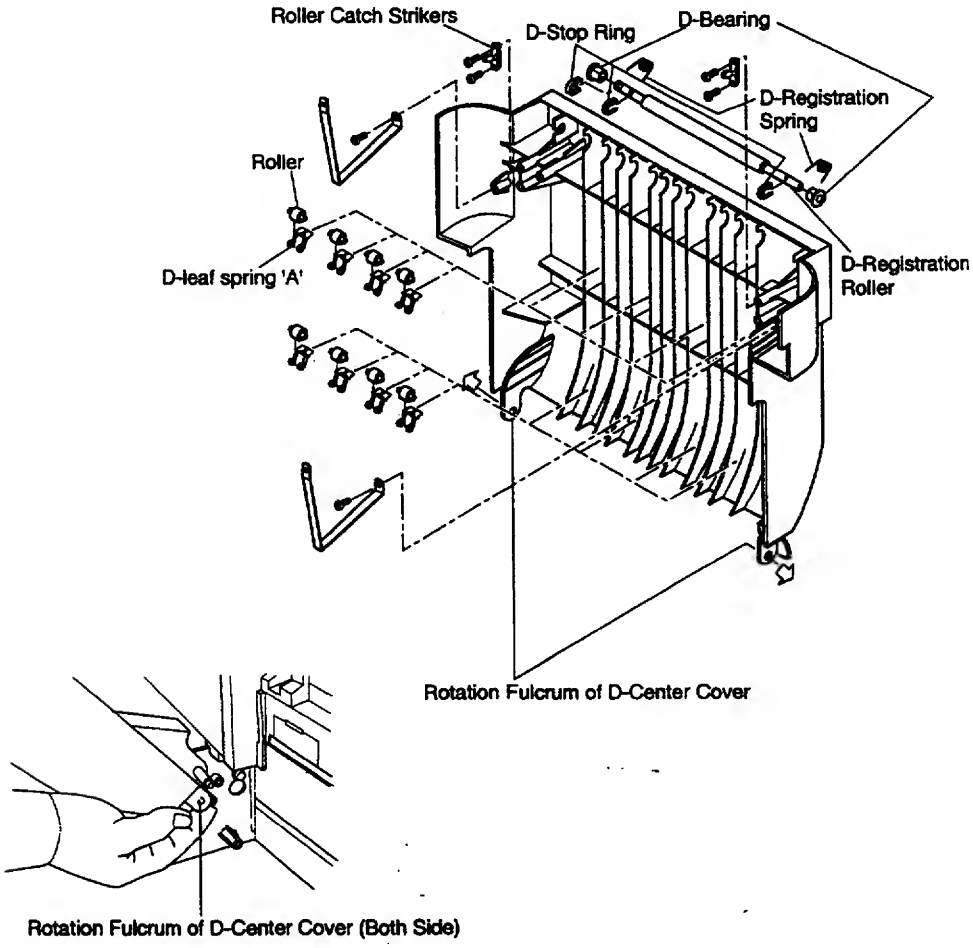


Fig.7-20

7.2.4 D-Bottom Cover M

Tools

① A pair of tweezers

Procedures of Disassembly

① Pull out the D-bottom cover M.

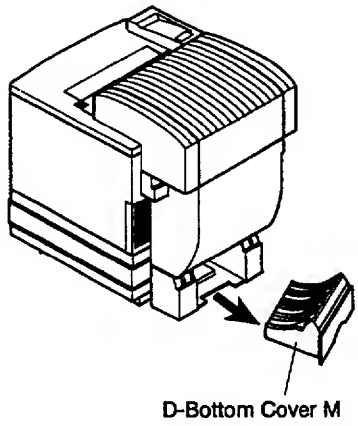


Fig.7-21

② Remove the rollers (4 pcs.).
③ Using a pair of tweezers, remove the D-leaf spring 'A' (4 pcs.).

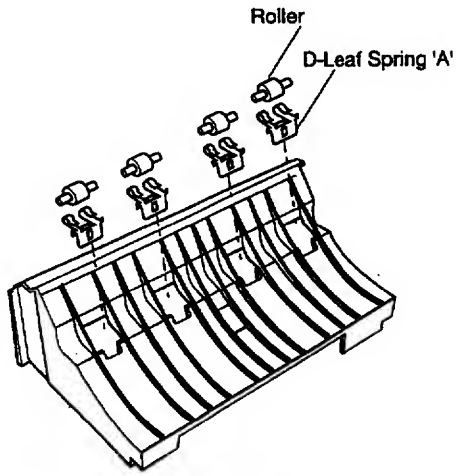


Fig.7-22

Procedures of Assembly

①. Prepare new D-bottom cover M.
②. Using a pair of tweezers, install the D-leaf spring 'A' (4 pcs.).
③. Install the rollers (4 pcs.).
④. Mount the D-bottom cover M.

7.2.5 D-Motor Cover

Tools

① Phillips Screwdriver #2

Procedures of Disassembly

① Remove the fixing screws (M4×8: 2 pcs.) of D-top cover (R), and then remove the D-top cover (R).
[See Item 7.2.1., Figure 7-11.)
② Pressing and rotating the hook of D-motor cover, remove the D-motor cover.
③ Using a pair of tweezers, remove the D-leaf spring 'A' (4 pcs.).

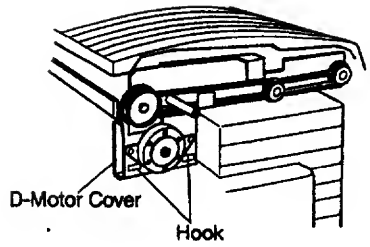


Fig.7-6

Procedures of Assembly

① Prepare and assemble new D-motor cover according to the reverse sequences of disassembly procedures above.

7.3 Motor and Solenoid

7.3.1 DPM1 Motor

Tools

① Phillips Screwdriver #1

Procedures of Disassembly

① Open the top cover unit. [See Item 7.1.1.]
② Remove the fixing screws (M4×8: 2 pcs.) of D-top cover (R), and then remove the D-top cover (R). [See Item 7.2.1., Figure 7-11.]
③ Remove the fixing screws (M4×8: 2 pcs.) of D-top cover (L), and then remove the D-top cover (L). [See Item 7.2.1., Figure 7-12.]
④ Remove the D-switch cover (R).

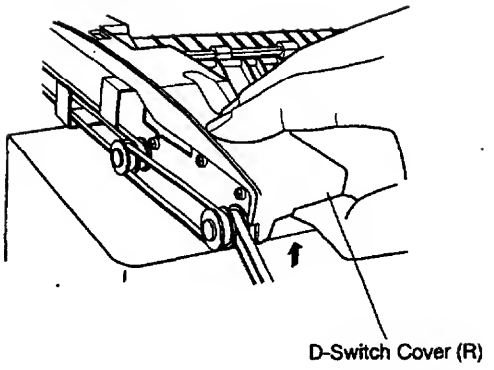


Fig.7-24

⑤ Disconnect the connector CN6 of relay P.W.B (D-PCB-TAS).

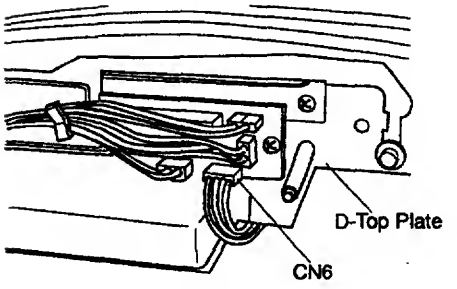


Fig.7-25

⑥ Put the timing belt out of DPM1 motor shaft's gear.
⑦ Remove the fixing screws (ST3×5: 2 pcs.) of DPM1 motor.
⑧ Remove the DPM1 motor.

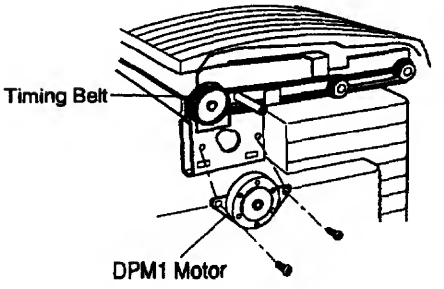


Fig.7-26

Procedures of Assembly

①. Prepare new DPM1 motor.
②. Set the DPM1 motor with fixing screws.
③. Mount the timing belt to the motor's gear.
④. From here and onward, follow the reversed sequences of disassembly procedures above.

7.3.2 DPM2 Motor (Lower)

Tools

① Phillips Screwdriver #1
② Short Screwdriver

Procedures of Disassembly

① Remove the D-center cover unit. [See Item 7.1.2.]
② Remove the fixing screws (BT4×10: 2 pcs.) of D-bottom cover (R), and then remove the D-bottom cover (R). [See Item 7.2.3.]
③ Remove the fixing screws (BT4×10: 2 pcs.) of D-bottom cover (L), and then remove the D-bottom cover (L). [See Item 7.2.3.]
④ Remove the connector P.W.B cover. (BT3 × 8: 1 pc.)
⑤ Remove the fixing screws (BT3 × 8: 2 pcs.) of relay P.W.B (D-PCB-BAS).
⑥ Remove the connector CN4 from the relay P.W.B.
⑦ Remove the fixing screws (FT3×10: 4 pcs.) of D-main frame bottom and D-main frame unit.
⑧ Remove the D-motor holder B. (ST3 ×5: 2 pcs.)
⑨ Remove the fixing screws (ST3 × 5: 2 pcs.) of DPM2 motor.
⑩ Remove the DPM2 motor.

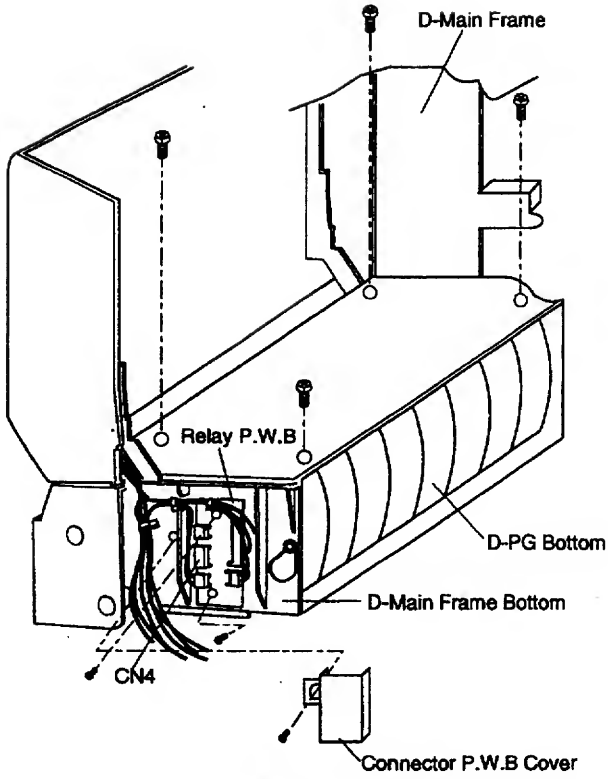


Fig.7-27

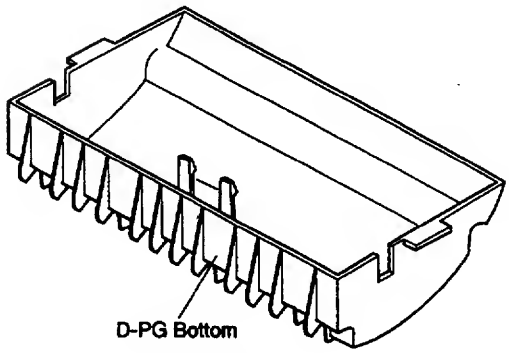


Fig.7-28

Procedures of Assembly

① Prepare new DPM2 motor. Both DPM2 and DPM1 are identical in the specification.
② Set the DPM2 motor to the D-motor holder B with fixing screws.
③ Mount the timing belt to the motor's gear of DPM2, and the D-motor holder B to the D-main frame bottom.
④ From here and onward, follow the reversed sequences of disassembly procedures above.

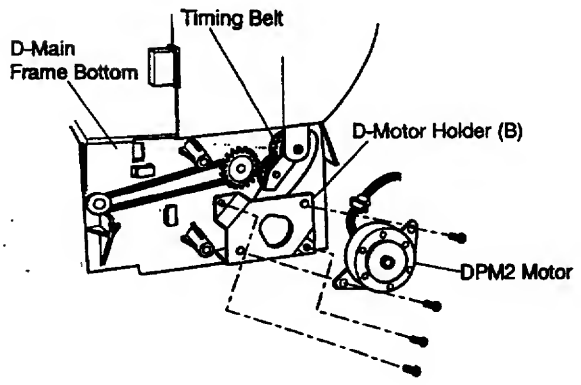


Fig.7-29

7.3.3 D-Fan Motor

Tools

① Phillips Screwdriver #1

Procedures of Disassembly

① Remove the D-top cover (R).
[See Item 7.2.1.]
② Remove the D-top cover (L).
[See Item 7.2.1.]
③ Remove the connector CN7 from the relay P.W.B (D-PCB-TAS).
④ Remove the fan motor harness (connected with CN7) from the lamp of D-top cover unit.

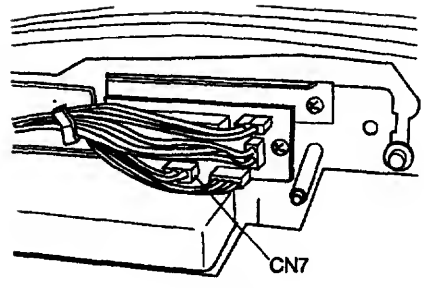


Fig.7-30

⑤ Remove the fixing screws (M4 × 30: 2 pcs.) of D-fan motor.
⑥ Remove the D-fan motor.

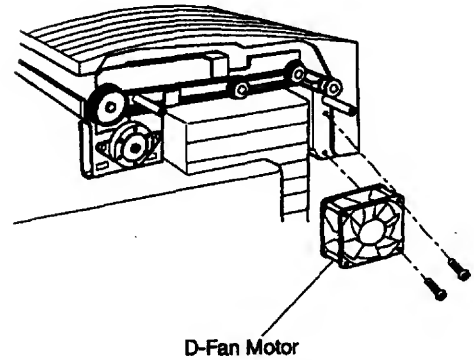


Fig.7-31

Procedures of Assembly

① Prepare new D-fan motor.
② Set the D-fan motor with fixing screws.
③ From here and onward, follow the reversed sequences of disassembly procedures above.

7.3.4 Solenoid

Tools

① Phillips Screwdriver #1

Procedures of Disassembly

① Remove the top cover unit (R).
[See Item 7.1.1.]
② Remove the D-top cover (R).
[See Item 7.2.1.]
③ Remove the D-top cover (L).
[See Item 7.2.1.]
④ Remove the D-SW cover (R).
[See Item 7.2.2.]
⑤ Remove the connector CN5 of relay P.W.B (D-PCB-TAS).
⑥ Remove the solenoid harness (connected with.CN5) from the clamp of top cover unit.

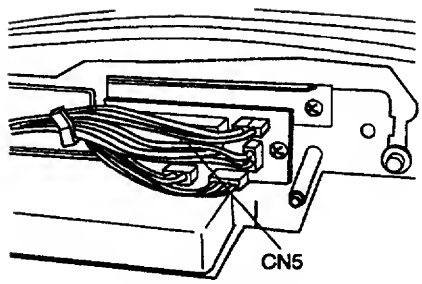


Fig.7-32

⑦ Remove the fixing screws (ST3 × 5: 2 pcs.) of solenoid assembly, and then remove the solenoid assembly
⑧ Remove the fixing screws (M3 × 5: 2 pcs.) from the solenoid assembly, and disassemble the solenoid into the solenoid and installation base.

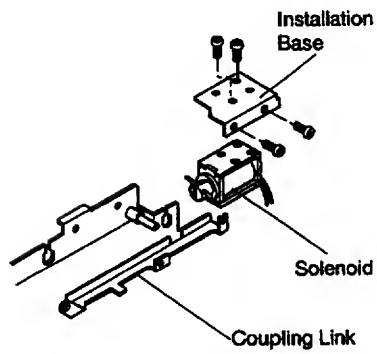


Fig.7-33

Procedures of Assembly

① Prepare new solenoid.
② Install the solenoid to the installation base to be the solenoid assembly.
③ Install the solenoid assembly by coupling the plunger's pin and slide arm.
④ From here and onward, follow the reversed sequences of disassembly procedures above.

7.4 Replacement of Print P.W.B

7.4.1 DUPL P.W.B

Tools

① Phillips Screwdriver #1
② Phillips Screwdriver #2

Procedures of Disassembly

① Remove the LFU side cover (L). [See Item 7.1.2.]
② Remove the fixing screws (ST3 × 6: 2 pcs.) of P.W.B cover.
③ Remove the P.W.B cover.
④ Remove the connectors (DPCN1 ~ DPCN4) connected with the DUPL P.W.B. [See Figure 7-34.]
⑤ Remove the P.W.B holder assembly from the LFU. [See Figure 7-34.]
⑥ Remove the fixing screws (ST3×6: 2 pcs.) of P.W.B holder from the P.W.B base assembly.
⑦ Remove the DUPL P.W.B from the holder assembly.

Procedures of Assembly

① Prepare new DUPL P.W.B.
② Install DUPL P.W.B. to the holder assembly.
③ From here and onward, follow the reversed sequences of disassembly procedures above.

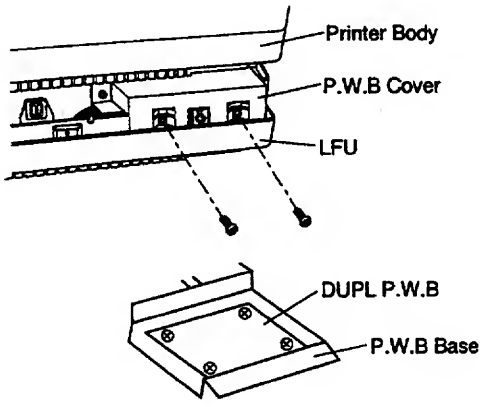


Fig.7-34

7.4.2 Relay P.W.B [D-PCB-TAS]

Tools

① Phillips Screwdriver #1
② Phillips Screwdriver #2

Procedures of Disassembly

① Remove the D-top cover (L). [See Item 7.2.1.]
② Remove the connectors (CN1 ~ CN8) connected with the D-PCB-TAS.
③ Remove the fixing screws (ST3 × 5: 2 pcs.) of P.W.B.
④ Remove the D-PCB-TAS P.W.B from the D-top cover unit.

Procedures of Assembly

① Prepare new D-PCB-TAS P.W.B.
② Install the D-PCB-TAS P.W.B to the D-top cover unit.
③ Connect the harness connector to the connector (CN1 ~ CN8).
④ Install the D-top cover (L).

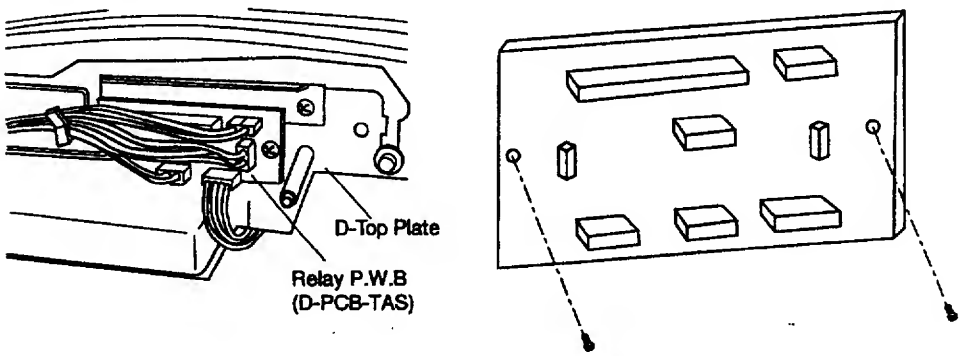


Fig.7-35

7.4.3 Relay P.W.B [D-PCB-BAS]

Tools

① Phillips Screwdriver #1
② Phillips Screwdriver #2

Procedures of Disassembly

① Remove the D-center cover unit. [See Item 7.1.2.]
② Remove the fixing screws (BT3 × 8: 1 pc.) of connector P.W.B cover.
③ Remove the connector P.W.B cover from the D-center cover unit.
④ Remove the fixing screws (BT3 × 8: 2 pcs.) of P.W.B.
⑤ Pull out the D-PCB-BAS P.W.B , and then disconnect the connectors (CN1 ~ CN5) connected with the D-PCB-BAS P.W.B.
⑥ Remove the PD-PCB-BAS P.W.B from the D-center cover unit.

Procedures of Assembly

① Prepare new D-PCB-BAS P.W.B.
② Connect the harness connector to the connector of D-PCB-BAS P.W.B.
③ Install the D-PCB-BAS P.W.B to the D-center cover unit.
④ Install the connector P.W.B cover.

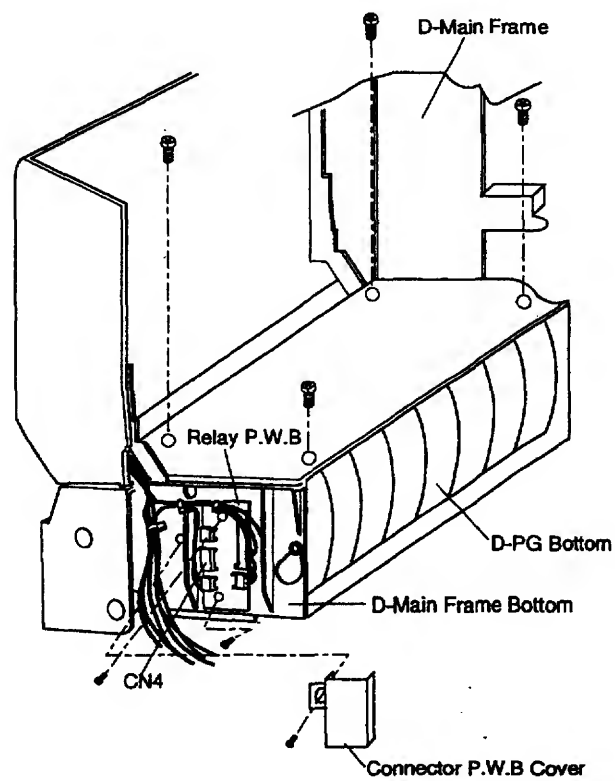


Fig.7-36

7.5 Switch and Sensor

7.5.1 Interlock Switch (D-SW1, D-SW2)

Tools

① Phillips Screwdriver #1

Procedures of Disassembly

① Remove D-center cover unit.
[See Item 7.1.2.]
② Remove the fixing screws (BT3 × 8: 3 pcs.) of D-switch base (M), and then remove the D-switch base (M).

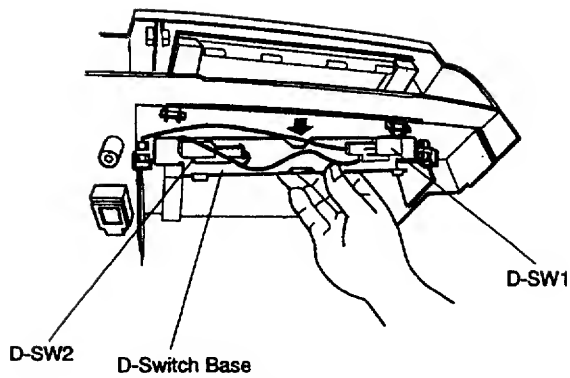


Fig.7-37

③ Remove the fixing screws (M3×14: 2 pcs.) of D-SW1 and D-SW2.
④ Disconnect the connector connected with D-SW1 and D-SW2.

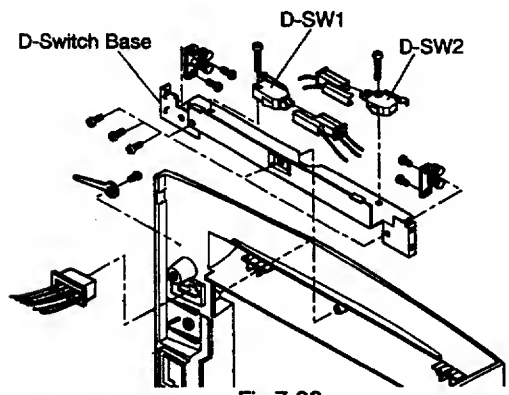


Fig.7-38

Procedures of Assembly

① Prepare new D-SW1 and D-SW2.
(Both D-SW1 and D-SW2 are identical in the specification.)
② Install the D-SW1 and D-SW2 to the D-switch base (M).
③ From here and onward, follow the reversed sequences of disassembly procedures above.

7.5.2 Interlock Switch (D-SW3)

Tools

① Phillips Screwdriver #1

Procedures of Disassembly

① Remove D-center cover unit.
[See Item 7.1.2.]
② Pull out the D-bottom cover M.
[See Item 7.2.4.]
③ Remove the connecotr P.W.B cover.
(BT3×8: 1 pc.)
④ Remove the fixing screw (BT3 × 8: 2 pcs.) of relay P.W.B (D-PCB-BAS).
⑤ Make the harness of D-SW3 a little bit loosened.
⑥ Remove the wire material of D-SW3 from the style hook of D-main frame bottom (3 locations).
⑦ Remove the D-SW3 base from the hook, and. pull it out toward the arrow direction.
⑧ Remove the D-SW3 from the D-SW3.
(M3×14: 1 pc.)
⑨ Disconnect the connector from the D-SW3.

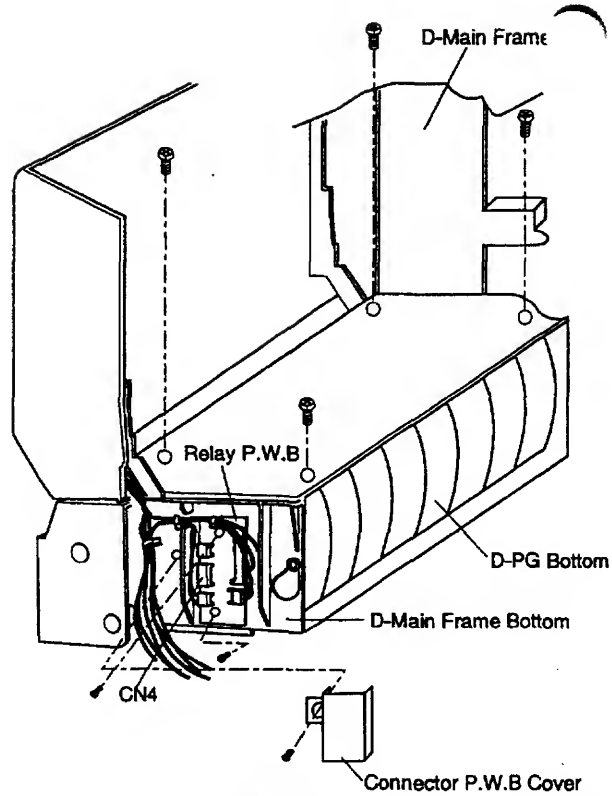


Fig.7-39

Procedures of Assembly

① Prepare new D-SW3.
② Install the D-SW1 and D-SW2 to the base.
③ Connect the connector with the D-SW3.
④ Assemble the D-SW base assembly to D-main frame bottom.
⑤ From here and onward, follow the reversed sequences of disassembly procedures above.

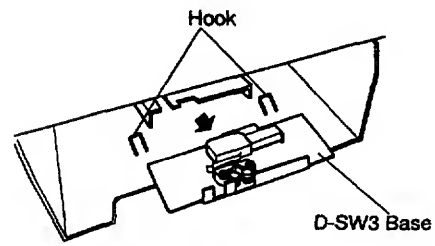


Fig.7-40

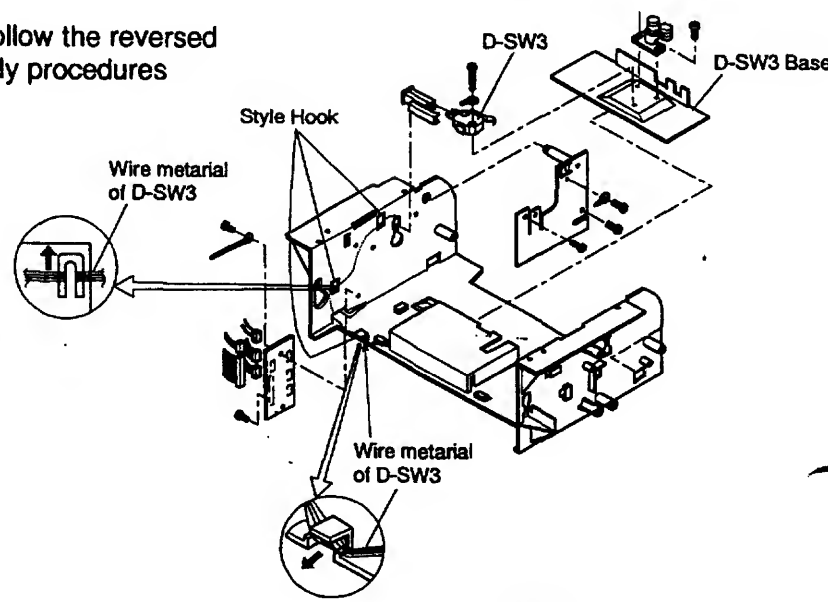


Fig.7-41

7.5.3 Interlock Switch (D-SW4, D-SW5)

Tools

① Phillips Screwdriver #1

Procedures of Disassembly

① Remove the D-top cover (R).
[See Item 7.2.1.]
② Remove the D-switch cover (R).
[See Item 7.2.2.]
③ Remove the D-top cover (L).
[See Item 7.2.1.]
④ Remove the D-switch cover (L).
[See Item 7.2.2.]
⑤ Remove the fixing screws (ST3×5: 2 pcs.) of D-switch base (R), and then remove the D-switch base (R).
⑥ Remove the fixing screw (M3×14) of the interlock switch (D-SW4).
⑦ Disconnect the connector connected with the interlock switch (D-SW4).
⑧ Remove the D-switch base (L).

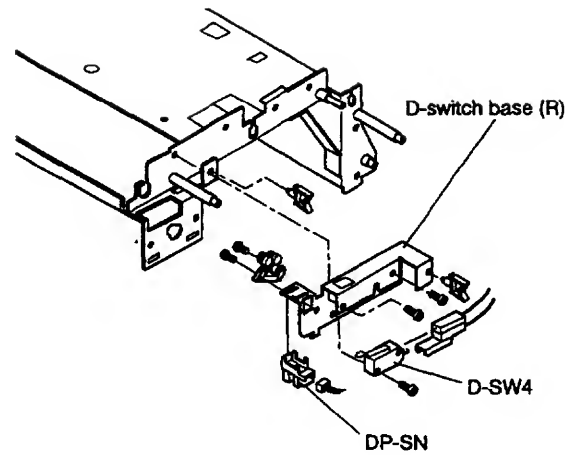


Fig.7-42

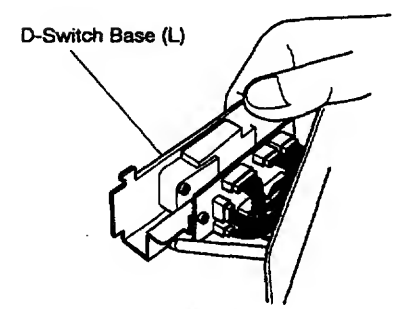


Fig.7-43

⑨ Remove the relay P.W.B (D-PCB-TAS) from the D-switch base (L) by removing the fixing screw (ST3 × 5: 2 pcs.).
⑩ Remove the fixing screw (M3×14) of the interlock switch (D-SW5).
⑪ Disconnect the connector connected with the interlock switch (D-SW5).

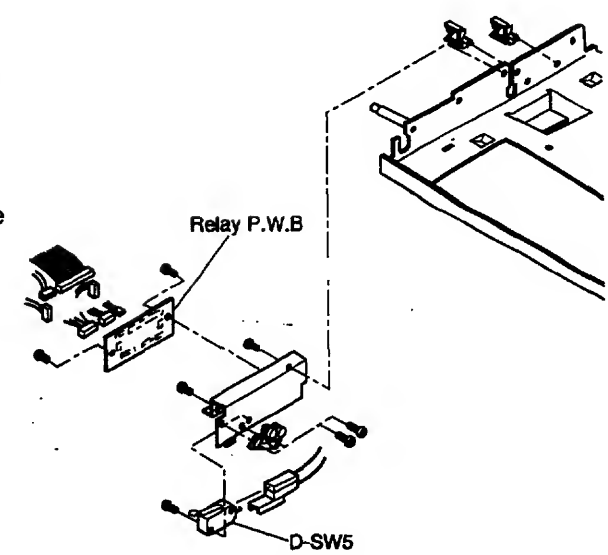


Fig.7-44

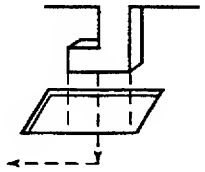
Procedures of Assembly

① Prepare new interlock switch D-SW4 and D-SW5.
(Both D-SW1 and D-SW2 are identical in the specification.)
② Install the D-SW4 and D-SW5 to each switch base.
③ From here and onward, follow the reversed sequences of disassembly procedures above.

Precaution in Assembly Work

⚠ Attention

- Have the hook of D-switch base meet the hole of D-top cover unit.



7.5.4 Exit Paper Full Sensor (DP-SN)

Tools

① Phillips Screwdriver #1

Procedures of Disassembly

① Remove the D-top cover (R).
[See Item 7.2.1.]
② Remove the D-switch cover (R).
[See Item 7.2.2.]
③ Remove the fixing screws (ST3 × 5: 2 pcs.) of D-switch base (R), and then remove the D-switch base (R).
④ Disconnect the connector connected with the DP-SN.
⑤ Remove the DP-SN from the D-switch base.

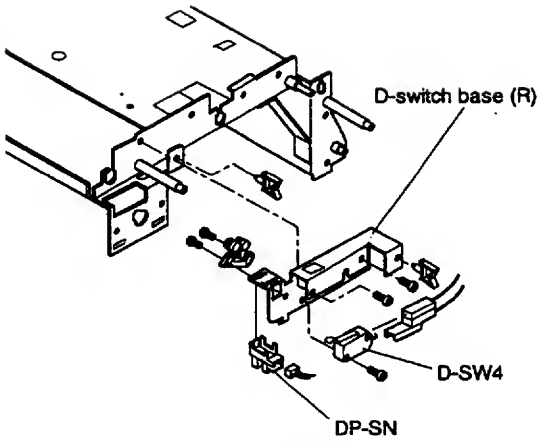


Fig.7-45

Procedures of Assembly

①. Prepare new DP-SN.
②. Install the DP-SN to the D-switch base (R).
③. From here and onward, follow the reversed sequences of disassembly procedures above.

7.5.5 Paper Sensor (PT5)

Tools

① Phillips Screwdriver #1

Procedures of Disassembly

① Remove the D-top cover unit.
[See Item 7.1.1.]
② Remove the D-top cover (R) and (L).
[See Item 7.2.1.]
③ Remove the D-top cover. [See Item 7.2.1.]
[See the precaution items for this removal.]
④ Remove the fixing screws (ST3×8: 2 pcs.) of the D-PG top (B), and then remove the D-PG top (B).
⑤ Disconnect the connector connected with the PT5.
⑥ Remove the PT5 from the D-top plate.

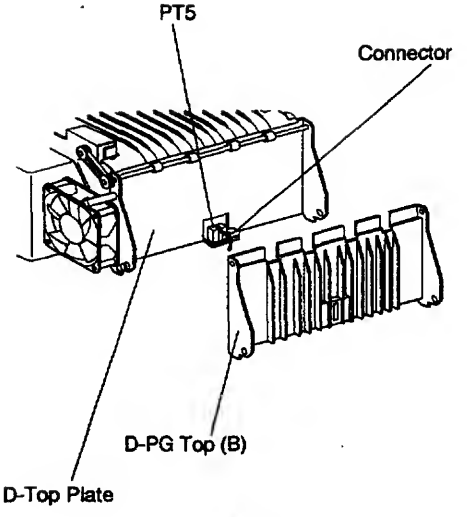


Fig.7-46

Procedures of Assembly

① Prepare new PT5.
② Install the PT5 to the PT5 support assembly.
③ From here and onward, follow the reversed sequences of disassembly procedures above.

7.5.6 Paper Sensor (PT4)

Tools

① Phillips Screwdriver #1
② Phillips Screwdriver #2

Procedures of Disassembly

① Remove the D-center cover unit. [See Item 7.1.2.]
② Remove the fixing screws (FT3×10: 4 pcs.) of the D-main frame unit and D-main frame bottom.
③ Remove the hook of the PT4 switch base, and then pull it out from the D-PG bottom.
④ Disconnect the harness connector of PT4 switch.
⑤ Remove the PT4 from the switch base.

Procedures of Assembly

① Prepare new PT4 switch.
② Install the PT4 to the switch base.
③ Install the switch base to the D-PG bottom.
④ Assemble the D-main frame unit and D-main frame bottom.
⑤ From here and onward, follow the reversed sequences of disassembly procedures above.

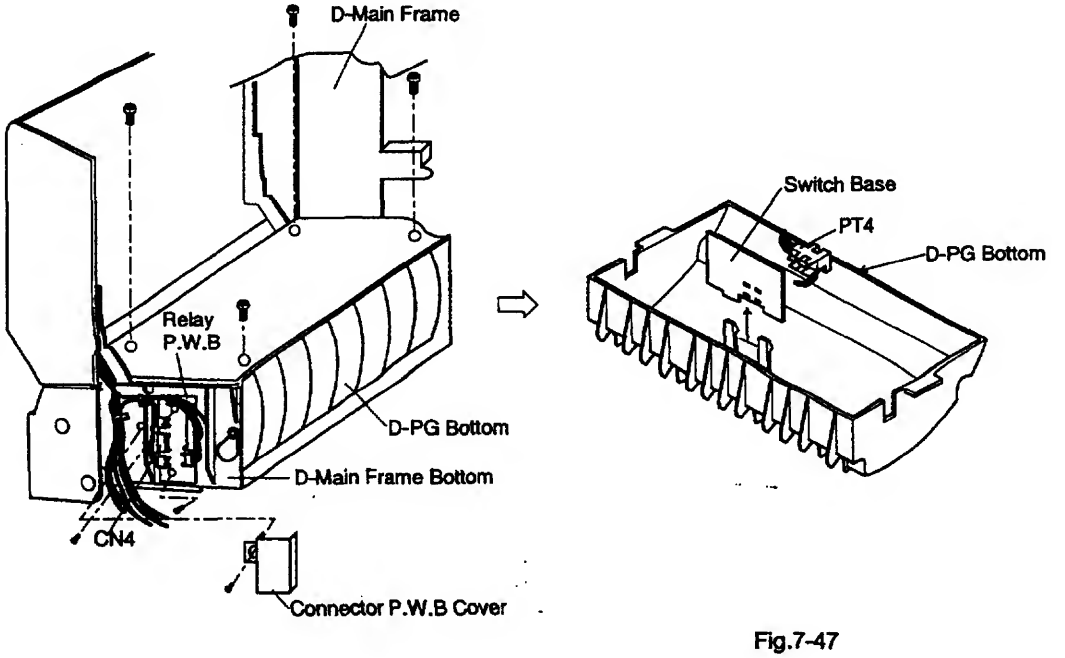


Fig.7-47

7.6 Roller

7.6.1 1st Roller (T) [D-RT1]

Tools

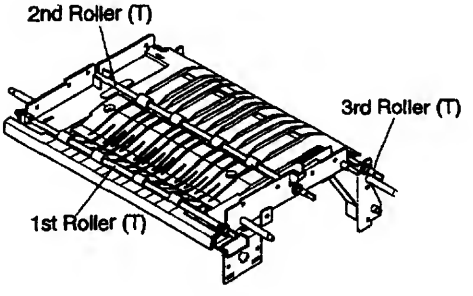
① Phillips Screwdriver #1
② Precision Driver Set (#1 ~ #6)
③ Long-Nose Pliers

Procedures of Disassembly

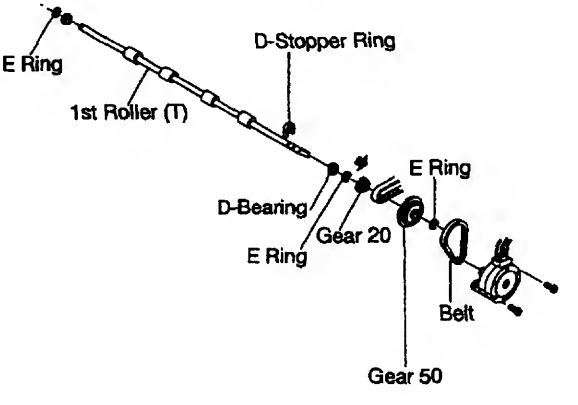
① Remove the D-side cover (R) and (L). [See Item 7.2.1.]
② Remove the D-switch cover (R) and (L).[See Item 7.2.2.]
③ Remove the D-stopper ring.
④ Undo the belt from the gear 50.
⑤ Remove the E ring from the shaft at the L side.
⑥ Sliding the D-bearing at the L side, remove the D-bearing from the frame.
⑦ Sliding the D-bearing at the R side, remove the D-bearing from the frame.
⑧ Remove the 1st roller (T) assembly from the D-top cover unit.
⑨ Remove the E ring at the R side, and then, remove the gear 20.
⑩ Remove the E ring at the R side, and then, remove the D-bearing from the shaft.

Procedures of Assembly

① Install the D-bearing, E ring, gear 20, 50 and E ring to the R side of 1st roller (T).
② Assemble the 1st roller (T) assembly to the D-top cover unit.
③ From here and onward, follow the reversed sequences of disassembly procedures above.



Layout DWG. of Roller



Parts Expanded DWG. of 1st roller (T)

Fig.7-48

7.6.2 2nd Roller (T) [D-RT2]

Tools

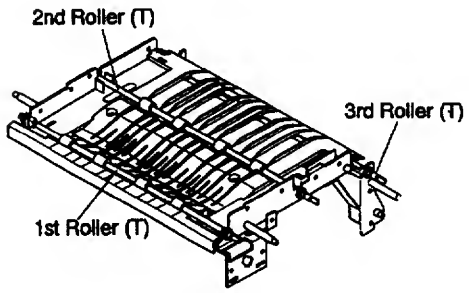
① Phillips Screwdriver #1
② Precision Driver Set (#1 ~ #6)
③ Long-Nose Pliers

Procedures of Disassembly

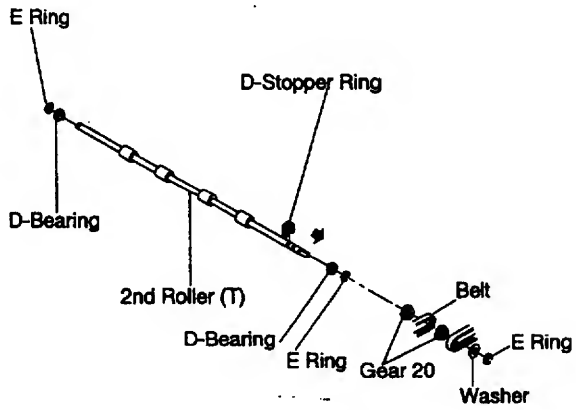
① Remove the D-top cover (R) and (L). [See Item 7.2.1.]
② Remove the D-switch cover (R) and (L).[See Item 7.2.2.]
③ Remove the D-stopper ring.
④ Remove the E ring at the L side.
⑤ Remove the D-bearing from the shaft at the L side.
⑥ Remove the E ring at the R side.
⑦ Remove the washer at the R side, and undo the belt from the gear 20.
⑧ Sliding the D-bearing at the R side, remove the D-bearing from the frame.
⑨ Remove the 2nd roller (T) assembly from the D-top cover unit.
⑩ Remove the E ring and D-bearing from the 2nd roller (T) assembly.

Procedures of Assembly

① Install the E ring, D-bearing, washer, and gear 20 to the 2nd roller (T).
② Assemble the 2nd roller (T) assembly to the D-top cover unit.
③ From here and onward, follow the reversed sequences of disassembly procedures above.



Layout DWG. of Roller



Parts Expanded DWG. of 2nd roller (T)

Fig.7-49

7.6.3 3rd Roller (T) [D-RT3]

Tools

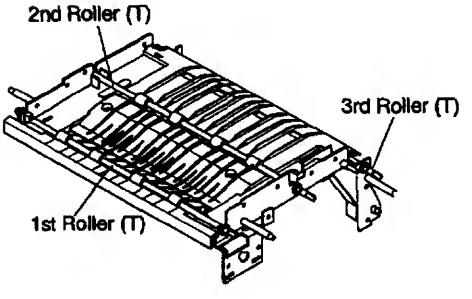
① Phillips Screwdriver #1
② Precision Driver Set (#1 ~ #6)
③ Long-Nose Pliers

Procedures of Disassembly

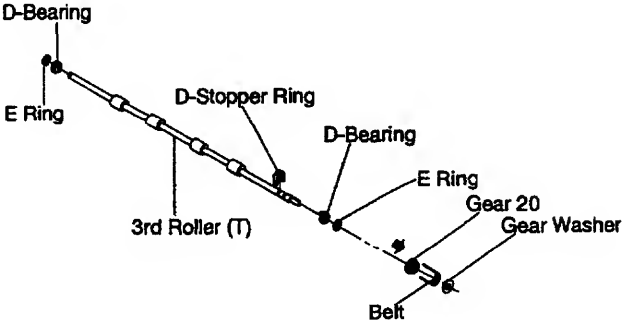
① Remove the D-top cover (R) and (L). [See Item 7.2.1.]
② Remove the D-switch cover (R) and (L).[See Item 7.2.2.]
③ Remove the D-stopper ring.
④ Remove the E ring at the L side.
⑤ Remove the D-bearing from the shaft at the L side.
⑥ Remove the E ring and washer at the R side.
⑦ Undo the belt from the gear 20.
⑧ Sliding the D-bearing at the R side, remove the D-bearing from the frame.
⑨ Remove the 3rd roller (T) assembly from the D-top cover unit.
⑩ Remove the gear20, E ring, and D-bearing from the 3rd roller (T) assembly.

Procedures of Assembly

① Install the D-bearing, E ring, and gear 20 to the 3rd roller (T).
② Assemble the 3rd roller (T) assembly to the D-top cover unit.
③ From here and onward, follow the reversed sequences of disassembly procedures above.



Layout DWG. of Roller



Parts Expanded DWG. of 3rd roller (T)

Fig.7-50

7.6.4 1st Roller (C) [D-RC1]

Tools

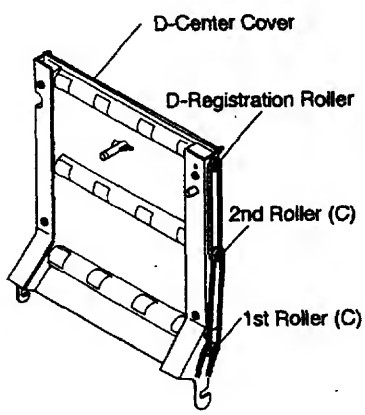
① Phillips Screwdriver #1
② Precision Driver Set (#1 ~ #6)
③ Long-Nose Pliers

Procedures of Disassembly

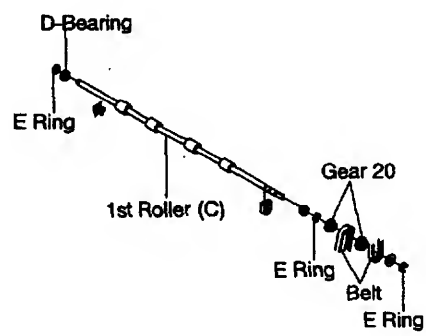
① Remove the D-center cover unit. [See Item 7.1.2.]
② Remove the D-center cover. [See Item 7.2.3.]
③ Remove the D-stopper ring.
④ Remove the E ring at the L side.
⑤ Remove the D-bearing from the shaft at the L side.
⑥ Remove the E ring and washer at the R side.
⑦ Undo the belt from the gear 20.
⑧ Sliding the D-bearing at the R side, remove the D-bearing from the frame.
⑨ Remove the 1st roller (C) assembly from the D-center cover unit.
⑩ Remove the gear 20, E ring and D-bearing from the 1st roller (C) assembly.

Procedures of Assembly

① Install the D-bearing, E ring, and gear 20 to the D-registration roller.
② Assemble the 1st roller (C) assembly to the D-center cover unit.
③ From here and onward, follow the reversed sequences of disassembly procedures above.



Layout DWG. of Roller



Parts Expanded DWG. of 1st roller (C)

Fig.7-51

7.6.5 2nd Roller (C) [D-RC2]

Tools

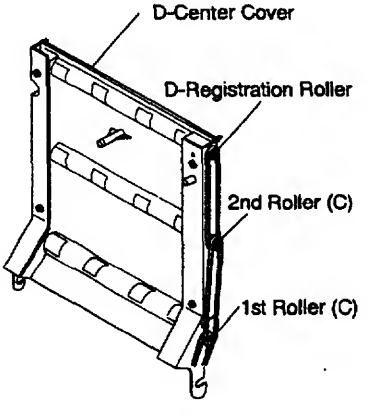
① Phillips Screwdriver #1
② Precision Driver Set (#1 ~ #6)
③ Long-Nose Pliers

Procedures of Disassembly

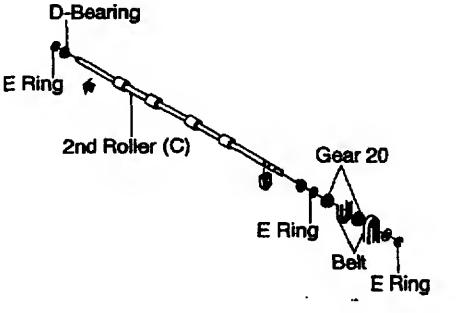
① Remove the D-center cover unit. [See Item 7.1.2.]
② Remove the D-center cover. [See Item 7.2.3.]
③ Remove the D-stopper ring.
④ Remove the E ring at the L side.
⑤ Remove the D-bearing from the shaft at the L side.
⑥ Remove the E ring and washer at the R side.
⑦ Undo the belt from the gear 20.
⑧ Sliding the D-bearing at the R side, remove the D-bearing from the frame.
⑨ Remove the 2nd roller (C) assembly from the D-center cover unit.
⑩ Remove the gear 20, E ring and D-bearing from the 2nd roller (C) assembly.

Procedures of Assembly

① Install the D-bearing, E ring, and gear 20 to the 3rd roller (T).
② Assemble the 3rd roller (T) assembly to the D-top cover unit.
③ From here and onward, follow the reversed sequences of disassembly procedures above.



Layout DWG. of Roller



Parts Expanded DWG. of 2nd roller (C)

Fig.7-52

7.6.6 D-Registration Roller [D-RR]

Tools

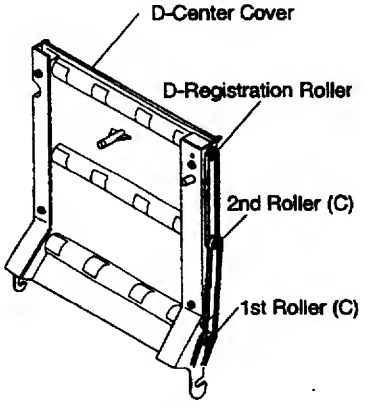
① Phillips Screwdriver #1
② Precision Driver Set (#1 ~ #6)
③ Long-Nose Pliers

Procedures of Disassembly

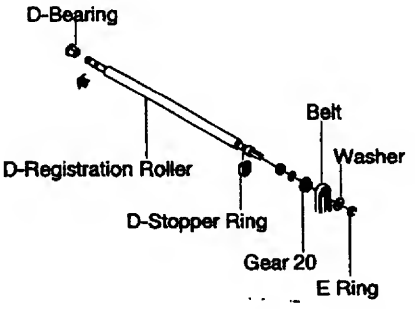
① Remove the D-center cover unit. [See Item 7.1.2.]
② Remove the D-stopper ring.
③ Remove the E ring at the L side.
④ Remove the D-bearing from the shaft at the L side.
⑤ Remove the E ring and washer at the R side.
⑥ Undo the belt from the gear 20.
⑦ Sliding the D-bearing at the R side, remove the D-bearing from the frame.
⑧ Remove the D-registration roller assembly from the D-center cover unit.
⑨ Remove the gear 20, E ring and D-bearing from the D-registration roller assembly.

Procedures of Assembly

① Install the D-bearing, E ring, and gear 20 to the D-registration roller.
② Assemble the D-registration roller assembly to the D-center cover unit.
③ From here and onward, follow the reversed sequences of disassembly procedures above.



Layout DWG. of Roller



Parts Expanded DWG. of D-registration roller

Fig.7-53

7.6.7 1st Roller (B) [D-RB1]

Tools

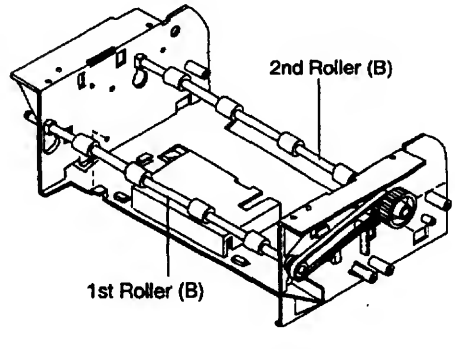
① Phillips Screwdriver #1
② Precision Driver Set (#1 ~ #6)
③ Long-Nose Pliers

Procedures of Disassembly

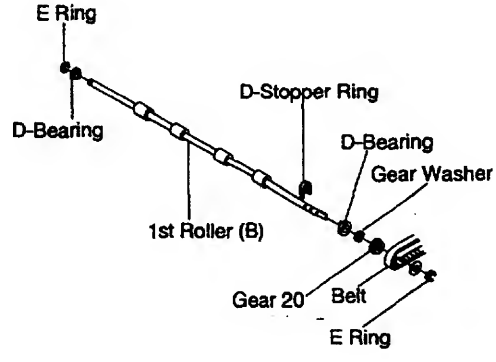
① Remove the D-bottom cover (R) and (L), and remove the D-center cover assembly. [See Item 7.2.3.]
② Remove the D-stopper ring.
③ Remove the E ring at the L side.
④ Remove the D-bearing from the shaft at the L side.
⑤ Remove the E ring and washer at the R side.
⑥ Undo the belt from the gear 20.
⑦ Sliding the D-bearing at the R side, and remove the D-bearing from the frame.
⑧ Remove the 1st roller (B) assembly from the D center cover unit.
⑨ Remove the gear 20, E ring, and D-bearing from the 1st roller (B) assembly.

Procedures of Assembly

① Install the D-bearing, E ring, gear 20 to the 1st roller (B).
② Assemble the 1st roller (B) assembly to the D-center cover unit.
③ From here and onward, follow the reversed sequences of disassembly procedures above.



Layout DWG. of Roller



Parts Expanded DWG. of 1st roller (B)

Fig.7-54

7.6.8 2nd Roller (B) [D-RB2]

Tools

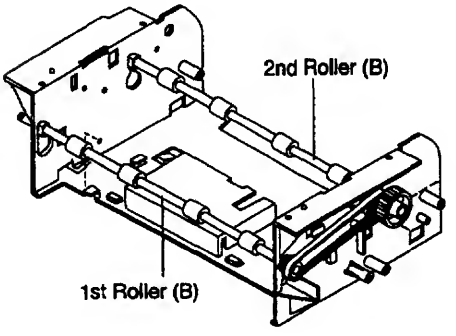
① Phillips Screwdriver #1
② Precision Driver Set (#1 ~ #6)
③ Long-Nose Pliers

Procedures of Disassembly

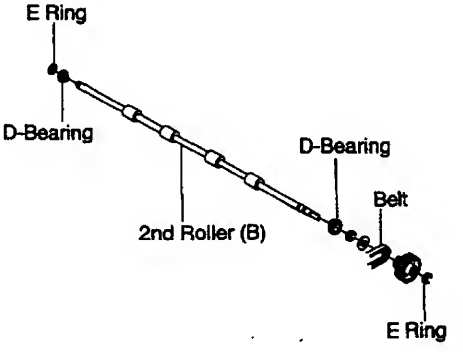
① Remove the D-bottom cover (R) and (L), and remove the D-center cover assembly. [See Item 7.2.3.]
② Remove the D-stopper ring.
③ Remove the E ring at the L side.
④ Remove the D-bearing from the shaft at the L side.
⑤ Remove the E ring and washer at the R side.
⑥ Undo the belt from the gear 20.
⑦ Sliding the D-bearing at the R side, and remove the D-bearing from the frame.
⑧ Remove the 2nd roller (B) assembly from the D center cover unit.

Procedures of Assembly

①. Install the D-bearing, E ring, gear 20 to the 2nd roller (B).
②. Assemble the 2nd roller (B) assembly to the D-center cover unit.
③. From here and onward, follow the reversed sequences of disassembly procedures above.



Layout DWG. of Roller



Parts Expanded DWG. of 2nd roller (B)

Fig.7-55

7.7 Guide and Others

7.7.1 D-Shutter AS

Tools

① Phillips Screwdriver #1

Procedures of Disassembly

① Remove the D-switch cover (R) and (L) according to the disassembly procedures of Item 7.2.2.
② Remove the fixing screws (S3×5: 2 pcs.) of D-switch base (R) TR, and then remove the D-switch base (R) TR.

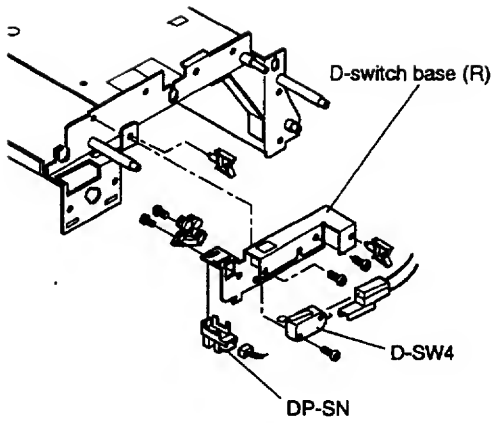


Fig.7-56

③ Rotating the D-shutter AS, remove the D-shutter AS.

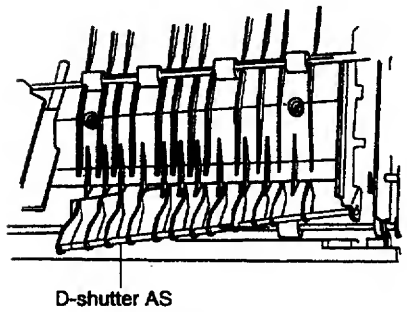


Fig.7-57

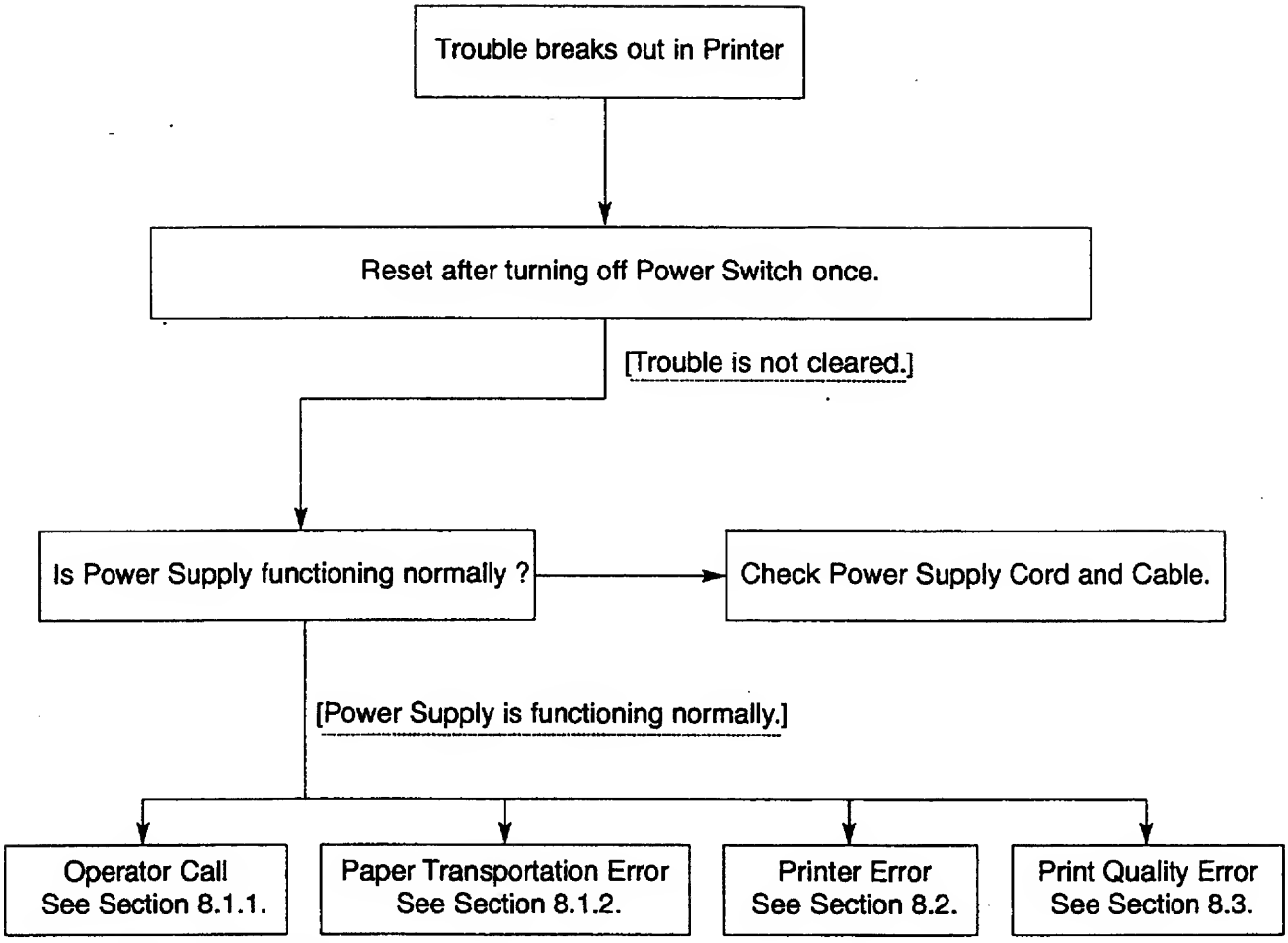
8. Troubleshooting

8.1 Outline 8-1

8.2 Printer Error 8-13

8. Troubleshooting

8.1 Outline



8.1.1 Operator Call

When one or more of the following statuses occur, the LED lamp will be lit and the corresponding message will be displayed on the liquid crystal display (LCD) panel.

(1). Replenishment of consumables is required.
(2). Waste toner pack is full of waste toner.
(3). Paper jam occurs.
(4). Time is up for the periodic maintenance.
(5). Maintenance work is incomplete.
(6). Operator call is not cleared.
(7). Paper exit tray is full of outputted papers.

Above statuses are not regarded as trouble; It can be cleared in accordance with the Table 8-1. If the operator call was still on after taking applicable action in accordance with the Table 8-1, there may be trouble occurred in the printer. In this case, call the maintenance company to check the printer.

1. Operator Call

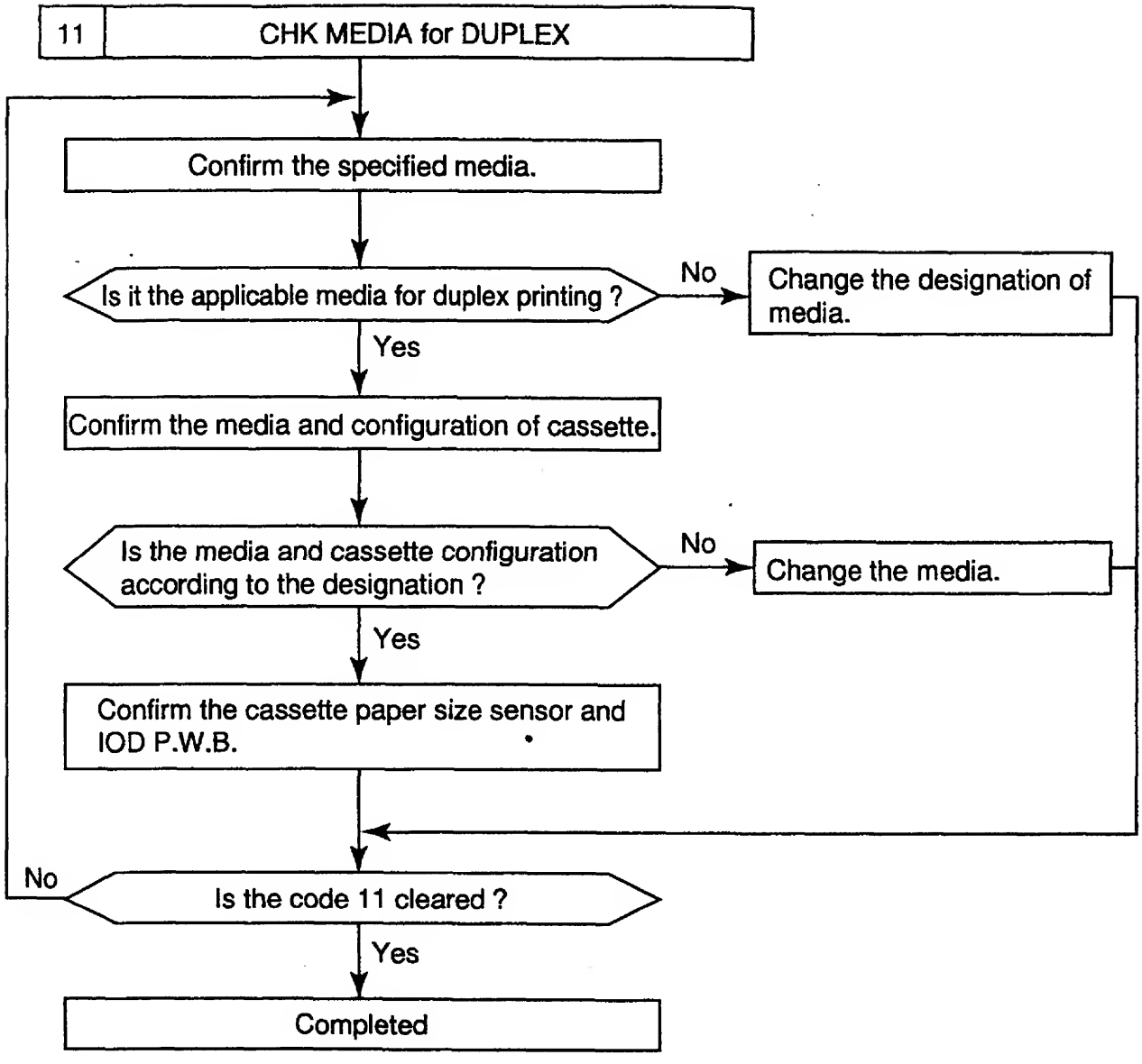
Table 8-1

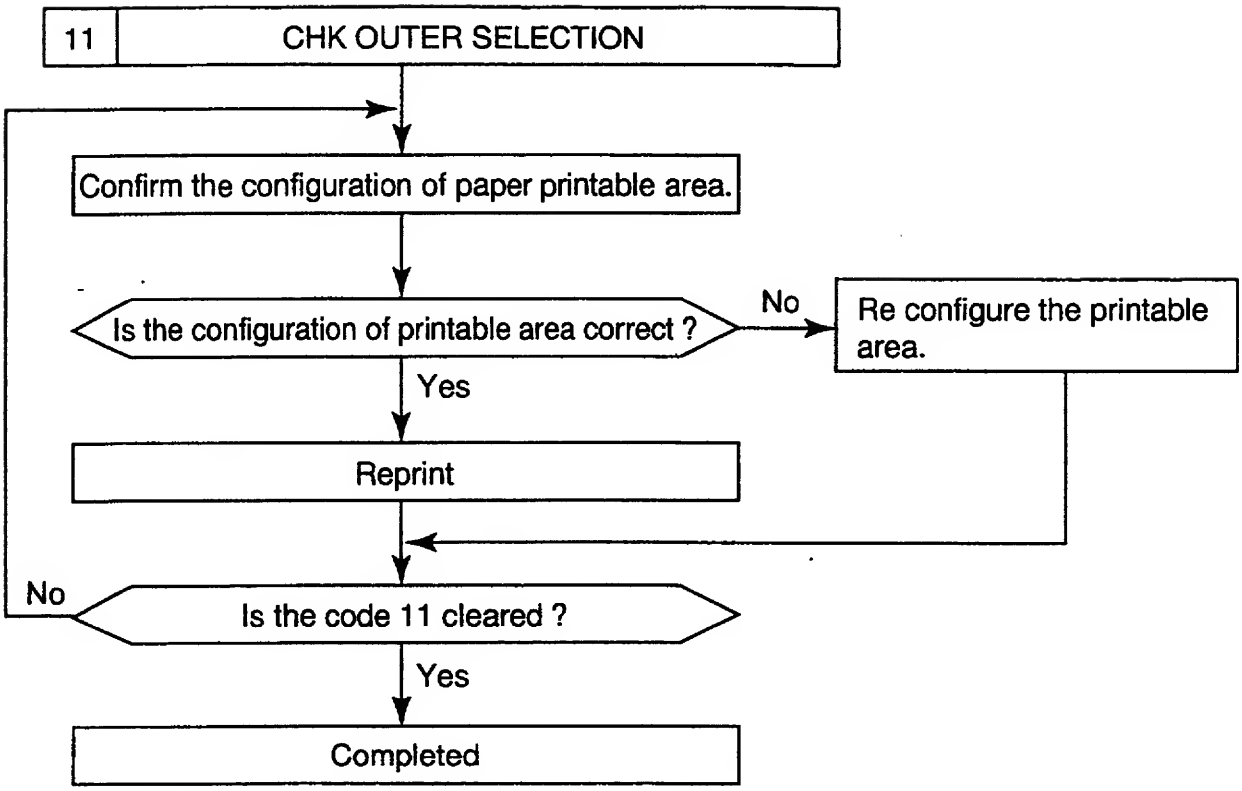
Subject of Operator Call		Countermeasure
Code	Message of Display	
11	NO MEDIA UPP/LOW [No paper in the upper cassette.] [No paper in the lower cassette.]	• Replenish papers.
	CHK MEDIA TYPE UPP/LOW [Inconsistency of media.]	• Change media.
	CHK MEDIA FOR DUPLEX [No duplex printing is possible for the designated media.]	• Change the media or designation.
	CHK OUTER SELECTION [Designation of paper feed and exit is wrong for the duplex printing.]	• Confirm the paper feed and exit, and change it accordingly.
12	NO TRAY UPP/LOW [No upper paper cassette.] [No lower paper cassette.]	• Install cassettes.
	STACKER FULL [Outputted paper is full at Paper Exit.]	• Remove the papers.
13	REPLACE TONER Y/M/C/K [Toner (Y, M, C, K) empty.]	• Replace with new toner cartridges.
14	CHECK WASTE TONER [Waste toner pack full of toner, or not installed]	• Replace with new waste toner pack.
	CHECK fusing OIL [About time to change oil bottle.]	• Replace with new oil bottle.
	CHK CLEANING ROLLER [About time to change cleaning roller.]	• Replace with new cleaning roller.
15	MISPRINT PAPER/PRREQ/MEDIA [Misprinting occurred]	• Confirm with status of paper cassette. • Confirm with correct paper size. • Confirm with consistency of media.
16	ALIGN TONER CG Y/M/C/K [Toner cartridge not installed]	• Confirm with installation of toner cartridge.
	ALIGN FU UNIT [Fusing unit not installed]	• Remove fusing unit once and reset it. • Reconfirm with firm installation.

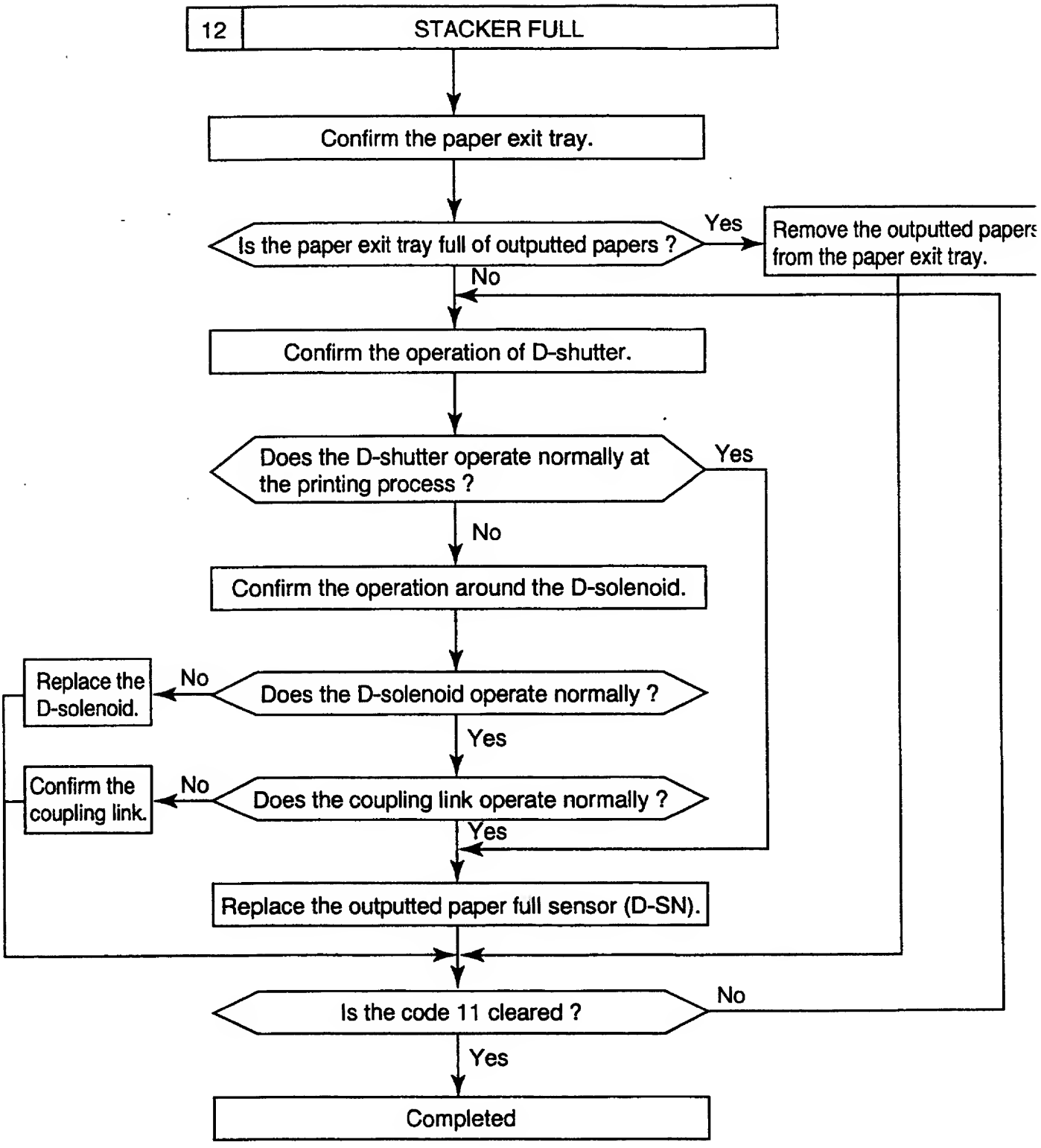
Subject of Operator Call		Countermeasure
Code	Message of Display	
16	ALIGN BELT CG [Belt cartridge not installed.]	• Confirm the installation of belt cartridge.
	ALIGN FUSER CL ROLLER [fusing Cleaning Roller is not installed.]	• Install the fusing cleaning roller.
	ALIGN LFU [Cable connection is not made between the engine and LFU.]	• Connect the cable between the engine and LFU.
17	MEDIA JAM FEED [Paper jamming at feeding area]	• Remove paper cassette, and remove paper jamming at feeding entrance.
	MEDIA JAM INNER [Paper jamming inside printer]	• Open transfer unit, and remove paper jammed inside.
	MEDIA JAM OUTER [Paper jamming at paper exit area]	• Open transfer unit / paper exit unit, and remove paper jammed inside.
	MEDIA JAM DRUM [Paper jamming as winding around transfer drum]	• Open transfer unit, and remove belt cartridge. And then, remove paper jamming as winding transfer drum.
	MEDIA JAM DPLEX [Duplex Paper Transportation Jam]	• Open the D top cover, and remove the stuck paper from inside of printer. • Open the D center cover, and remove the stuck paper from inside of printer. • Open the D bottom cover (M), and remove the stuck paper.
18	CLOSE PANEL FRONT/TOP/REAR [Front cover is open.] [Paper exit cover is open.] [Transfer unit is open.]	• Confirm the covers or transfer unit is securely closed.
	CLOSE TR PANEL DPU [Duplex Unit's cover is open.]	• Confirm the transfer unit is securely closed.
19	SLEEP MODE [Printer under idling condition (sleep).]	• Printer automatically returns to the operating conditions with Wake Up Command transmitted from the upper controller.
01	WAIT [Printer under warming-up.]	• These are normal operation modes.
00	READY [Printer ready to print as standby status.]	
02	PRINT [Printer under printing process.]	

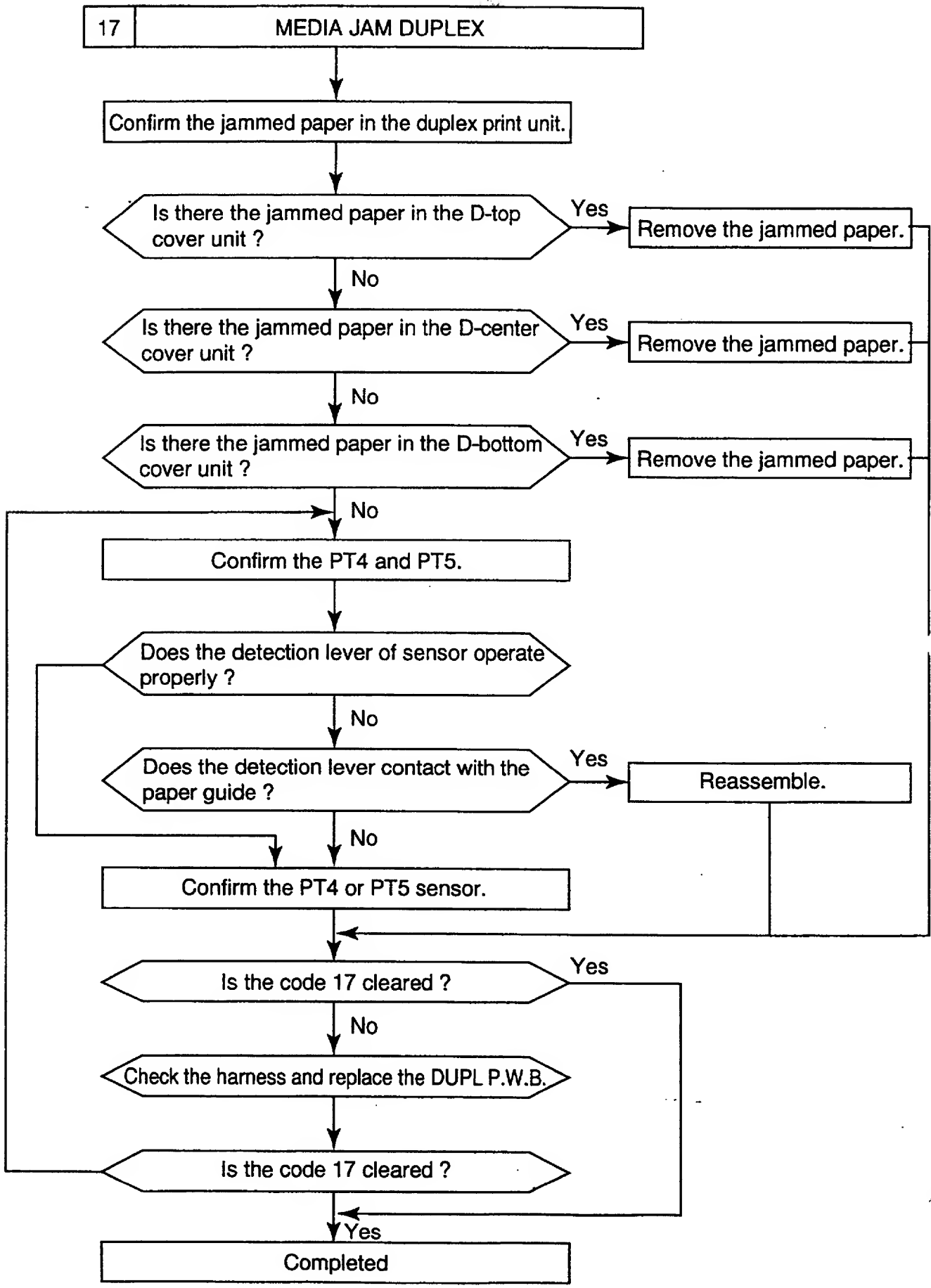
(6). Uncleared Operator Call

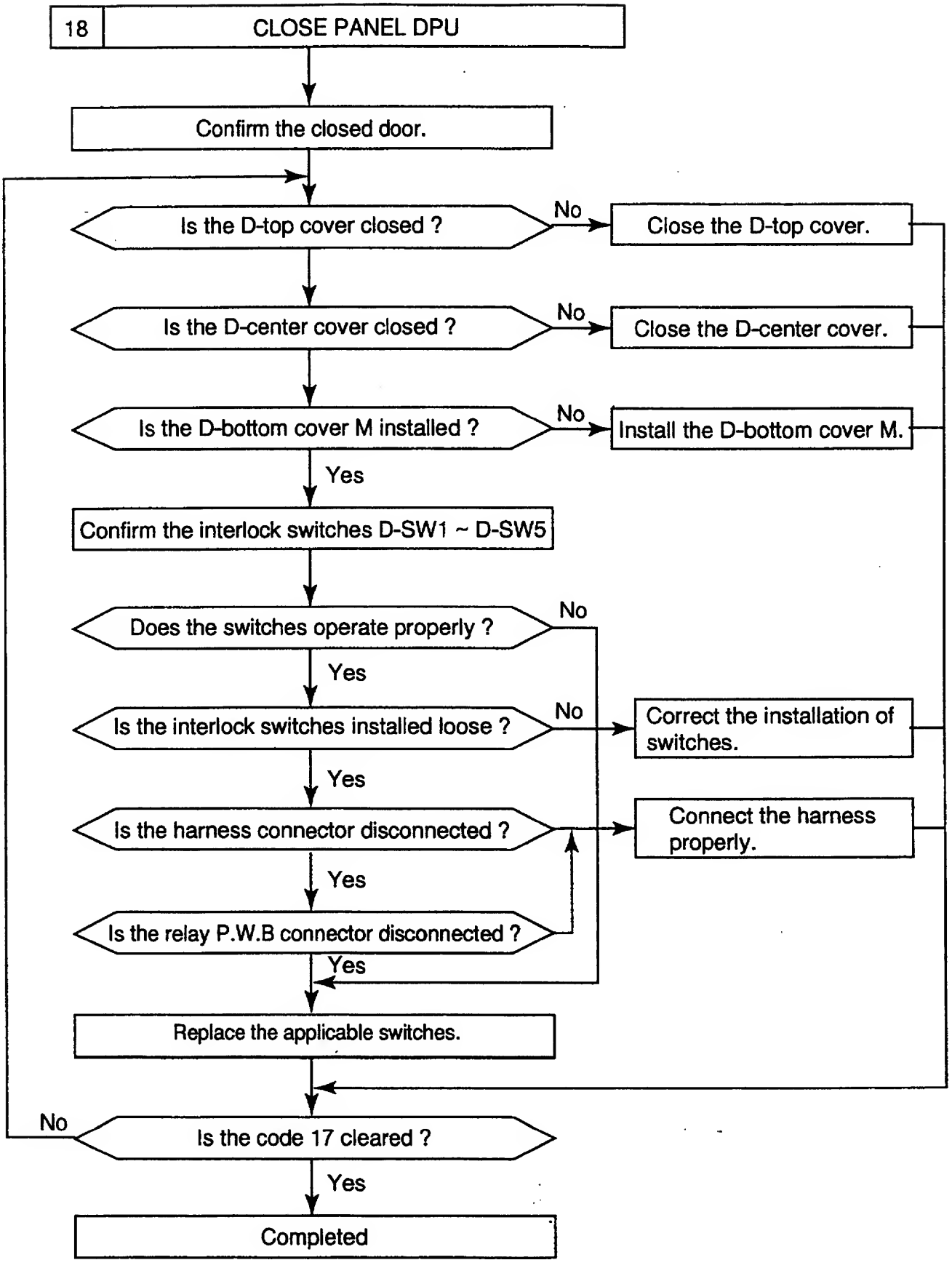
Any operator call at the normal operation can be cleared by the countermeasures listed in the table 8-1. If not, there must be some troubles occurring. In this case, check and take the corrective action according to the following procedures. For the printing part, see the maintenance manual of Hitachi color laser printer model SL1.


11
CHK MEDIA for DUPLEX
Confirm the specified media.
Is it the applicable media for duplex printing ?
No
Change the designation of media.
Yes
Confirm the media and configuration of cassette.
Is the media and cassette configuration according to the designation ?
No
Change the media.
Yes
Confirm the cassette paper size sensor and IOD P.W.B.
No
Is the code 11 cleared ?
Yes
Completed


11
CHK OUTER SELECTION
Confirm the configuration of paper printable area.
Is the configuration of printable area correct ?
No
Re configure the printable area.
Yes
Reprint
No
Is the code 11 cleared ?
Yes
Completed


12
STACKER FULL
Confirm the paper exit tray.
Is the paper exit tray full of outputted papers ?
Yes
Remove the outputted papers from the paper exit tray.
No
Confirm the operation of D-shutter.
Does the D-shutter operate normally at the printing process ?
Yes
No
Confirm the operation around the D-solenoid.
Replace the D-solenoid.
No
Does the D-solenoid operate normally ?
Yes
Confirm the coupling link.
No
Does the coupling link operate normally ?
Yes
Replace the outputted paper full sensor (D-SN).
Is the code 11 cleared ?
No
Yes
Completed

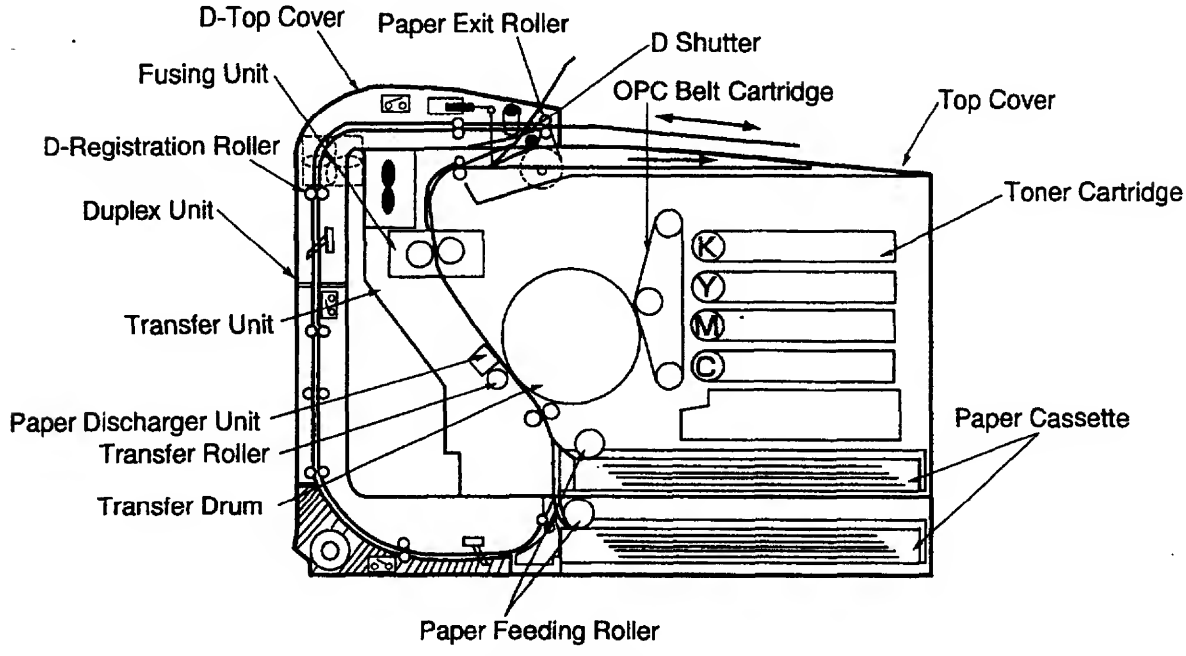

17
MEDIA JAM DUPLEX
Confirm the jammed paper in the duplex print unit.
Is there the jammed paper in the D-top cover unit ?
Yes
Remove the jammed paper.
No
Is there the jammed paper in the D-center cover unit ?
Yes
Remove the jammed paper.
No
Is there the jammed paper in the D-bottom cover unit ?
Yes
Remove the jammed paper.
No
Confirm the PT4 and PT5.
Does the detection lever of sensor operate properly ?
No
Does the detection lever contact with the paper guide ?
Yes
Reassemble.
No
Confirm the PT4 or PT5 sensor.
Is the code 17 cleared ?
Yes
No
Check the harness and replace the DUPL P.W.B.
Is the code 17 cleared ?
Yes
Completed


18
CLOSE PANEL DPU
Confirm the closed door.
Is the D-top cover closed ?
No
Close the D-top cover.
Is the D-center cover closed ?
No
Close the D-center cover.
Is the D-bottom cover M installed ?
No
Install the D-bottom cover M.
Yes
Confirm the interlock switches D-SW1 ~ D-SW5
Does the switches operate properly ?
No
Yes
Is the interlock switches installed loose ?
No
Correct the installation of switches.
Yes
Is the harness connector disconnected ?
Connect the harness properly.
Yes
Is the relay P.W.B connector disconnected ?
Yes
Replace the applicable switches.
No
Is the code 17 cleared ?
Yes
Completed

8.1.2 Paper Transport Error

Paper is transported through the path shown in Fig.8-1. Paper jam at the following locations is the user-friendly for clearance.

- Paper Feeding Part / • Transfer Part / • fusing Part / • Duplex Unit Part /
- Paper Exiting Part.



[Fig.8-1]

(1). Feed Jam

Table 8-2-1

Problem Item	P#	Check Item	Result	Corrective Action
Print Paper	1	Is the print paper a recommended paper ?	NO	Use a recommended paper.
	2	Is the print paper humid ? (Has the paper been abandoned ?)	YES	Replace the existing papers with new papers.
Paper Cassette	3	Is the print paper set in place ?	NO	Set the paper in the proper place.
	4	Is the end plate properly set up ?	NO	Set the end plate to meet the paper size.
Pick-Up Roller	5	Is the print paper caught in the paper feeding part ?	YES	Remove the paper being caught.
	6	Is the pick-up roller damaged ?	NO	Ask the serviceman to replace the damaged pick-up roller.

P# : Procedure Number

(2). Inner Jam

Table 8-2-2

Problem Item	P#	Check Item	Result	Corrective Action
Transfer Unit		Open the transfer unit for check.		
	1	Is there any paper inside the unit ?	Yes	Remove the paper inside.
	2	Is the transfer roller firmly locked by the lock lever ?	No	Fix the transfer roller by the lock lever.
	3	Is the paper discharger unit installed in place ?	No	Install the paper discharger unit firmly in place.
	4	Is the wire of paper discharger unit damaged ?	Yes	Replace the existing paper discharger unit with new unit.
Fusing Unit	5	Is the fusing unit installed in place ?	No	Install the fusing unit firmly in place.
	6	Is there any paper pinched between the rollers ?	Yes	Remove the pinched paper.
	7	Is there fusing oil still in the oil bottle ?	No	Replace the existing oil bottle with new bottle.

(3). Duplex unit Jam

Table 8-2-3

Problem Item	P#	Check Item	Result	Corrective Action
Duplex Unit		Open the D-top cover of D-top cover unit for checking.		
	1	Is the D-top cover securely closed ?	No	Open and close the D-top cover,and confirm the cover is closed securely.
	2	Is there any paper remaining on top of the D-paper guide (D-PG) ?	Yes	Remove the remaining paper.
		Open the D-center cover of D-center cover unit for checking.		
	3	Is the D-center cover securely closed ?	No	Open and close the D-center cover, and confirm the cover is closed securely.
	4	Is there any paper remaining on center of the D-paper guide (D-PG) ?	Yes	Remove the remaining paper.
		Open the D-bottom cover (M) for checking.		
	5	Is the D-bottom cover securely installed ?	No	Install the D-bottom cover properly.
	6	Is there any paper stuck in the D-guide (M) ?	Yes	Install the D-bottom cover properly.

P# : Procedure Number

(4). Outer Jam

Table 8-2-4

Problem Item	P#	Check Item	Result	Corrective Action
Print Paper	1	Is the print paper a recommended paper ?	No	Use a recommended paper.
Paper Exit Unit	1	Is the D-top cover unit firmly locked by the lock lever ?	No	Open and close the D-top cover unit again.

P# : Procedure Number

8.2 Printer Error

If errors or failures occurred inside the printer, the applicable error message will be displayed on the operator panel, and the printer stops. If errors or failures would repeat even after pressing the clear switch, confirm the error code, and then call for the service of maintenance company nearby.

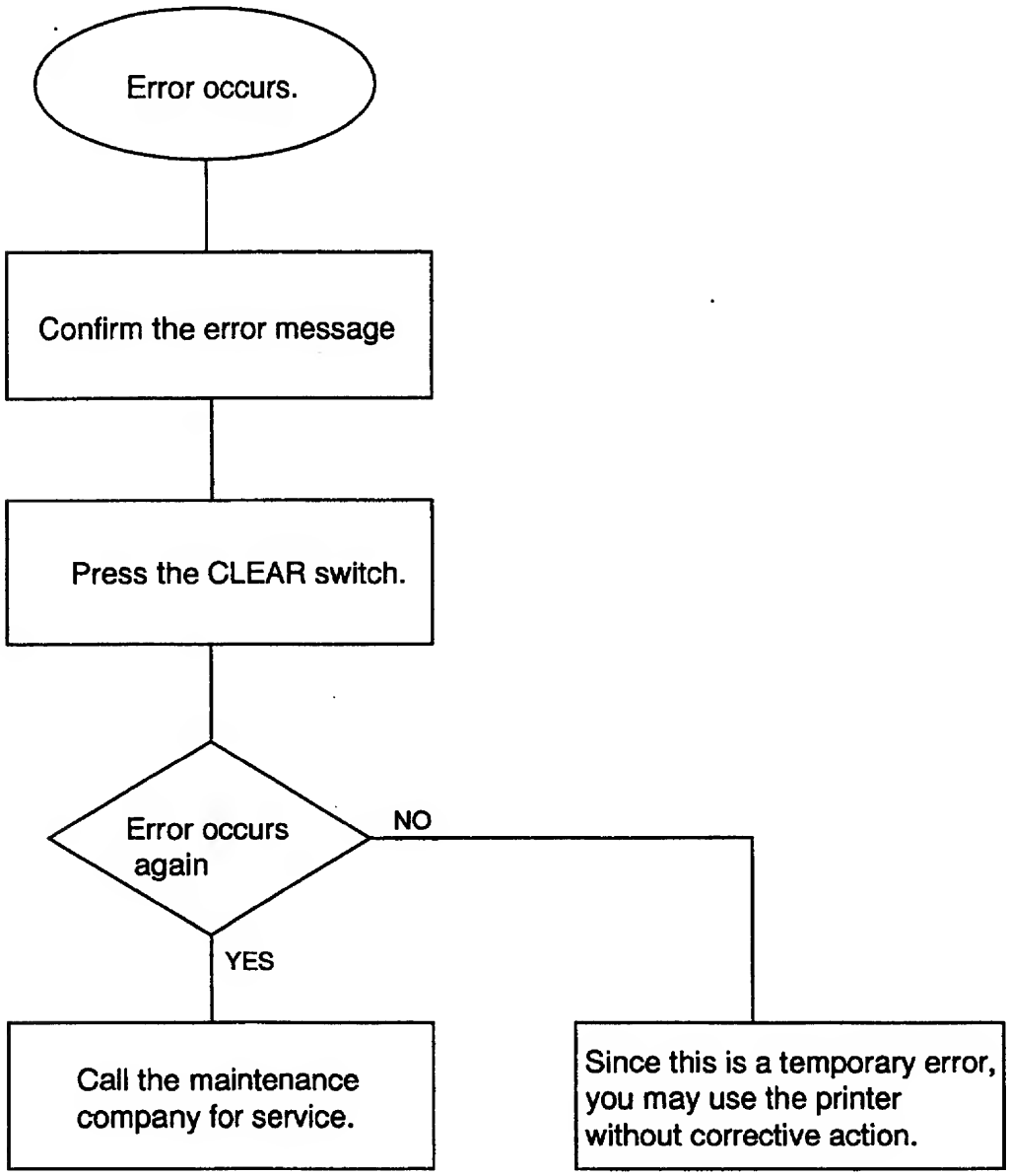


Table 8-1 : Error Code

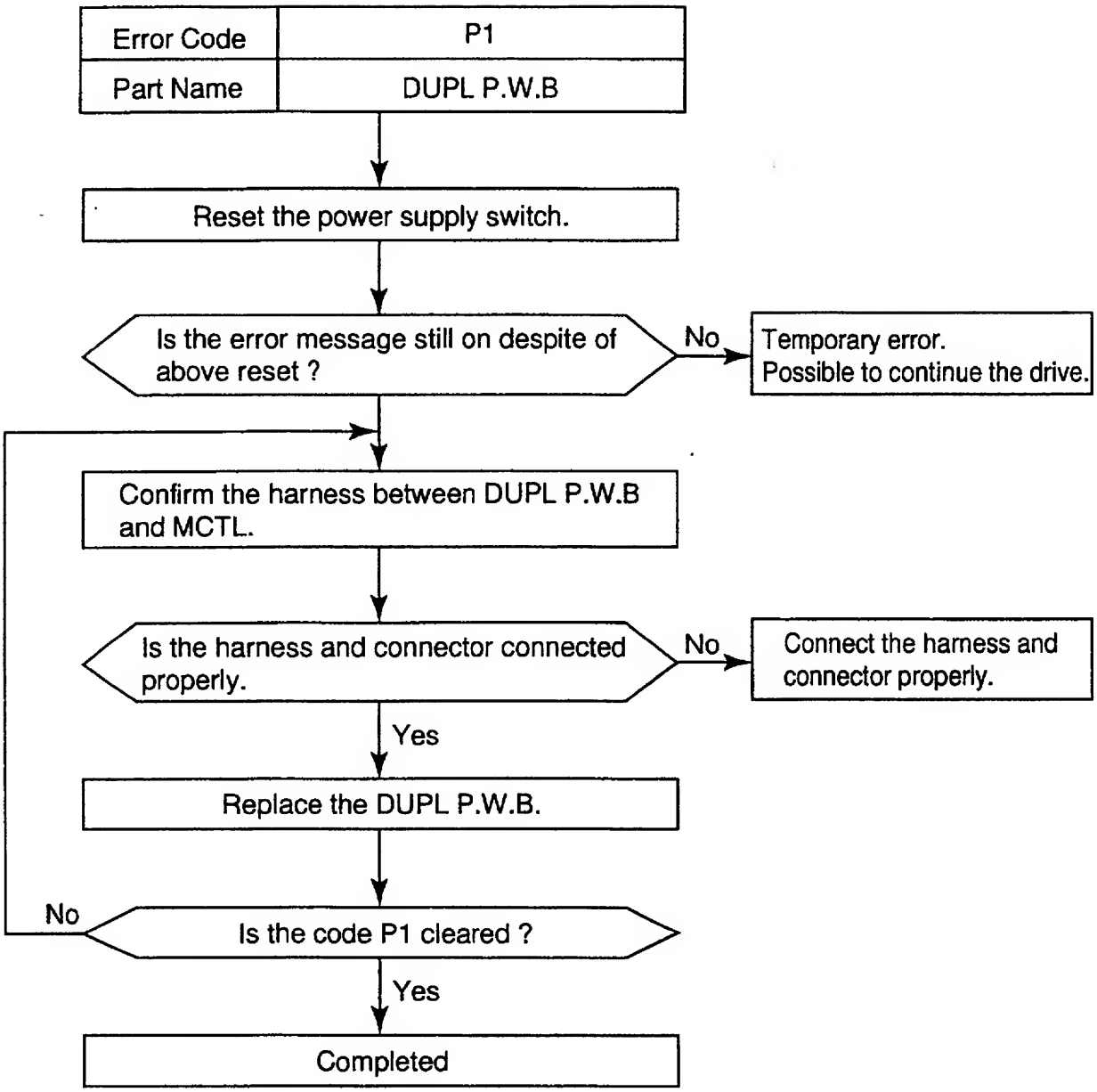
[1/2]

No.	Code	Description
1	C3	NVRAM Error (MCTL P.W.B.)
2	C4	Engine Controller MCTL P.W.B. Hardware Error
3	C7	Process Timing Clock Error (Main Motor Clock Error)
4	D1	Clutch Error of Yellow Developing Unit
5	D2	Clutch Error of Magenta Developing Unit
6	D3	Clutch Error of Cyan Developing Unit
7	D4	Clutch Error of Black Developing Unit
8	D5	HPSI Signal Error (Retract Error of Black and Yellow Toner Cartridge)
9	D6	HPSI Signal Error (Retract Error of Cyan and Magenta Toner Cartridge)
10	E1	Developing Motor Error
11	E2	Main Motor Error
12	E3	Transfer Drum Rotational Error
13	E4	Toner Empty Sensor Error (TPD)
14	E5	Transfer Roller Solenoid Error
15	E6	Brush Cleaner Solenoid Error
16	E7	Brush Cleaner Clutch Error
17	E8	Clutch Error of Fusing Unit
18	E9	Belt Sensor Error
19	EL	Erase Lamp Error
20	F0	Control Fan Error
21	F2	Ozone Fan (1) Error
22	F4	fusing Fan Error

Table 8-1 : Error Code

[2/2]

No.	Code	Description
23	F5	Charging HV (DC High Voltage) Error
24	H0	fusing Thermistor Error
25	H2	Fusing Temperature Error (Warming-Up Time Error)
26	H3	Fusing Temperature (3) Error (Heater Continuous ON Time Error)
27	H4	Fusing Temperature (4) Error (Heater Continuous OFF Time Error)
28	L1	Beam Sensor Error
29	L2	Scanner Motor Error
30	LL	Laser Power Error
31	P1	DCTL Error
32	P2	DCTL NVRAM Error
33	P4	D-Motor Error (DPM_1, DPM_2)
34	P5	D-Solenoid Error
35	P6	D-Fan Error


Error Code
P1
Part Name
DUPL P.W.B
Reset the power supply switch.
Is the error message still on despite of above reset ?
No
Temporary error.
Possible to continue the drive.
Confirm the harness between DUPL P.W.B and MCTL.
Is the harness and connector connected properly.
No
Connect the harness and connector properly.
Yes
Replace the DUPL P.W.B.
No
Is the code P1 cleared ?
Yes
Completed

Error Code	P2
Part Name	DUPL P.W.B NVRAM ERROR

Reset the power supply switch.

Is the error message still on despite of above reset ?

No → Temporary error. Possible to continue the drive.

Yes

DUPL P.W.B NVRAM Clear

Is the code P2 cleared ?

Yes

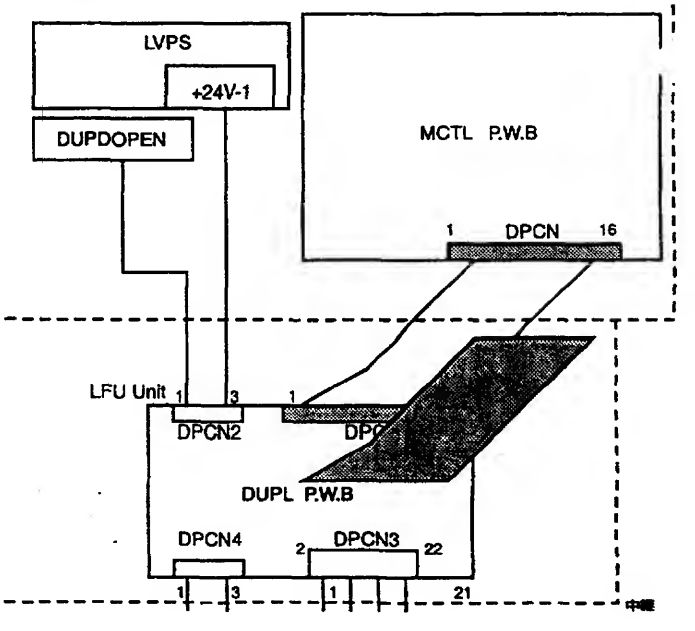
Replace the DUPL P.W.B.

No

Is the code P2 cleared ?

Yes

Completed



Error Code	P4
Part Name	DPM1 or DPM2 ERROR

Confirm the harness connection.

Is the connection correct between the DPM1 and the D-PCB-TAS P.W.B connector CN6 ?

Is the connection correct between the DPM2 and the D-PCB-BAS P.W.B connector CN6 ?

→ Connect the harness connected properly.

Is the connection correct between the D-PCB-ATS and DUPL P.W.B., D-CN1, D-CN2?

Is the connection correct between the D-PCB-BTS and DUPL P.W.B., D-CN1, D-CN2 ?

→ Connect the harness connected properly.

Is the code P4 cleared ?

Yes →

No ↓

Replace the DPM1 or DPM2

Is the code P4 cleared ?

Yes →

No ↓

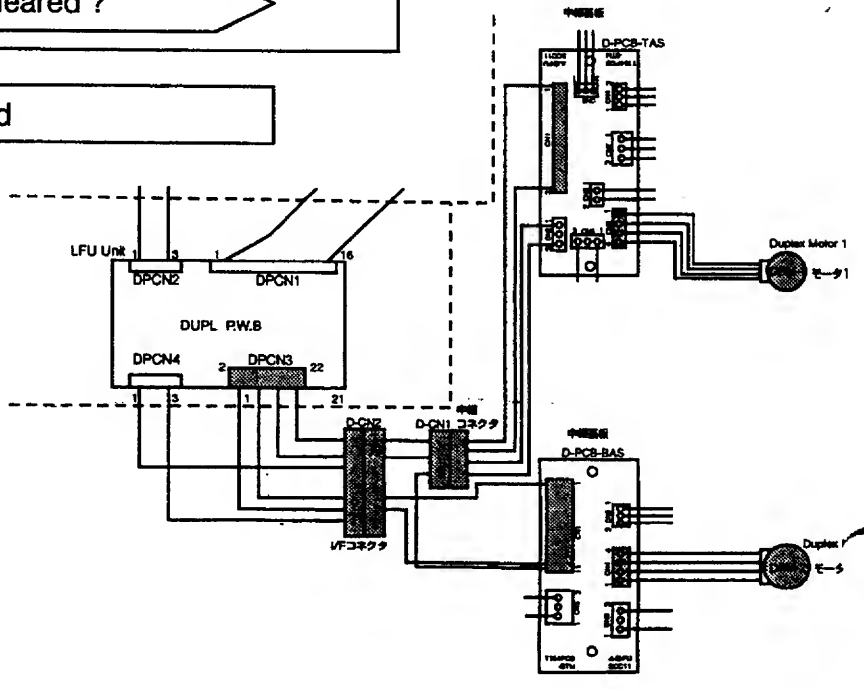
Replace the DUPL P.W.B.

Is the code P4 cleared ?

No ↓

Yes ↓

Completed



Error Code	P5
Part Name	D-SOLENOID ERROR

Confirm the connection of harness.

Is the connector CN5 connected properly between the D-SOL and D-PCB-TAS ?
No → Connect the harness connected properly.

Yes

Is the CN1 of D-PCB-TAS P.W.B connected properly with D-CN1, D-CN2 of DUPL P.W.B ?
No → Connect the harness connected properly.

Yes

Is the code P5 cleared ?
Yes → Completed

No

Replace the D-Solenoid

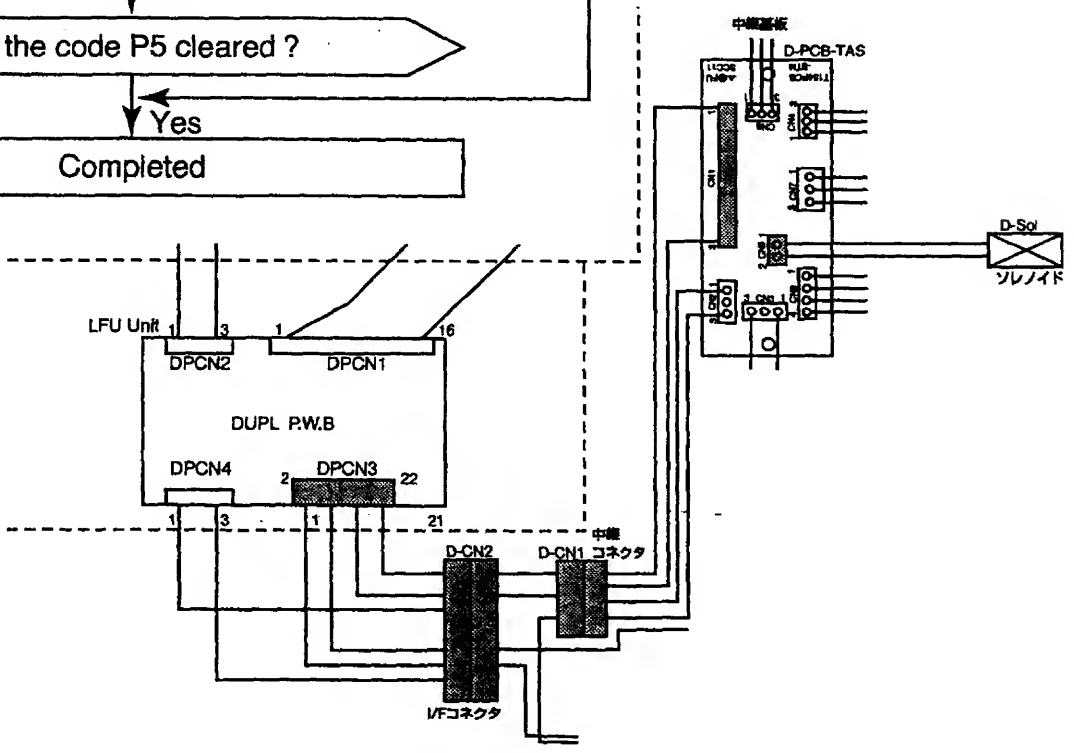
Is the code P5 cleared ?
Yes → Completed

No

Replace the DUPL P.W.B.

No

Is the code P5 cleared ?
No → (loop back to Confirm the connection of harness.)
Yes → Completed



Error Code	P6
Part Name	D-FAN ERROR

Confirm the connection of harness.

Is the connector CN7 connected properly between the D-FAN and D-PCB-TAS ?
No → Connect the harness connected properly.
Yes

Is the CN1 of D-PCB-TAS P.W.B connected properly with D-CN1, D-CN2 of DUPL P.W.B ?
→ Connect the harness connected properly.
Yes

Is the code P6 cleared ?
Yes
No

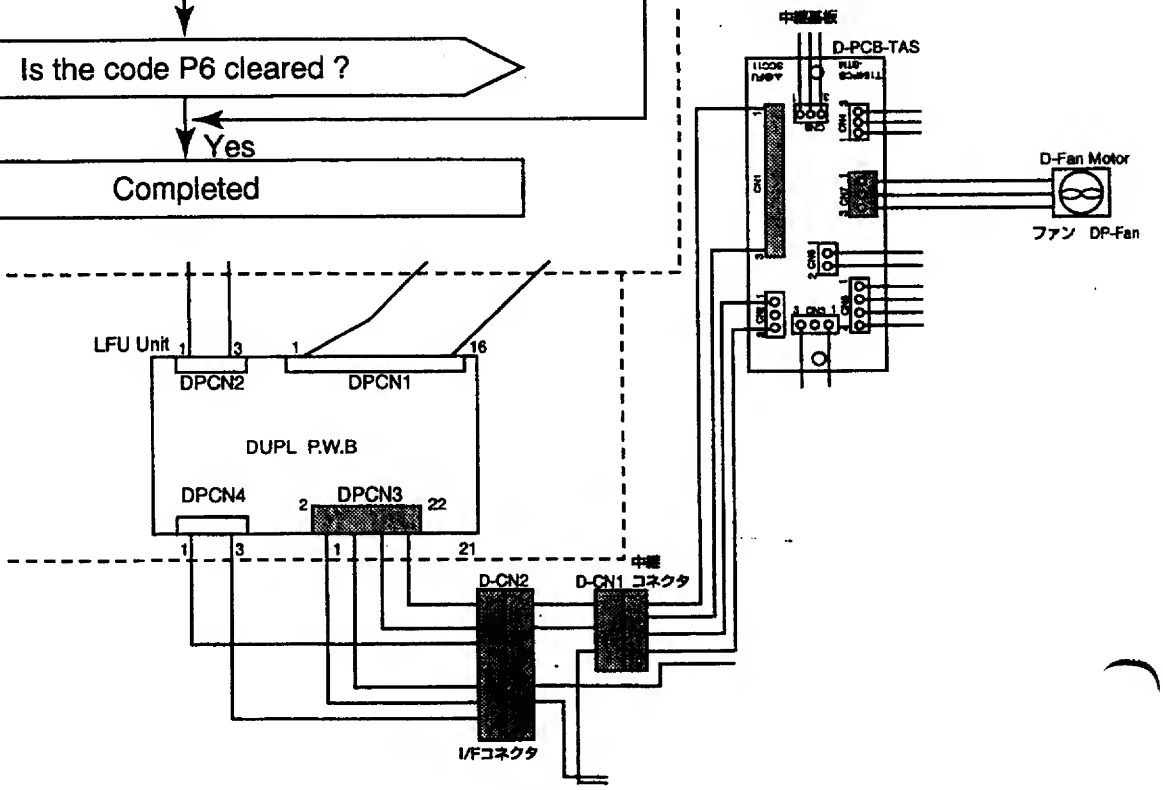
Replace the D-Fan Motor.

Is the code P6 cleared ?
Yes
No

Replace the DUPL P.W.B.

Is the code P6 cleared ?
No
Yes

Completed



9. Parts List

Replaceable Unit Parts 9-1

D-Top Cover Unit 9-3

D-Main Frame Unit 9-4

LFU 9-5

Printer Body 9-6

SPARE PARTS LIST for SL1D COLOR LASER PRINTER

1. Replaceable Unit Parts (Model:SL1D)

ILLUST. Number	CLASS	Name of Parts	Hitachi Parts Code	Q'ty/Unit	Lead Time	Remarks
2-1	C	D-Main Frame	126210	1	4	
2-2	C	D-Main Frame Bottom	126211	1	4	
2-3	C	D-Center Cover	126212	1	4	
1-1	C	D-Top Cover	126213	1	4	
1-2	C	D-Top Cover (R)	126214	1	4	
1-3	C	D-Top Cover (L)	126215	1	4	
2-4	C	D-Bottom Cover (M)	126216	1	4	
2-5	C	D-Bottom Cover (R)	126217	1	4	
2-6	C	D-Bottom Cover (L)	126218	1	4	
3-24	C	D-PG-LFU	126219	1	4	
1-4	D	D-SW Cover (R)	126220	1	4	
1-5	D	D-SW Cover (L)	126221	1	4	
1-6	D	D-Motor Cover	126222	1	4	
1-7	C	D-Shutter AS	126223	1	4	
3-25 1-16 2-16	D	D-Roller	126224	28	4	(100Pieces/Set)
1-8	C	D-PCB-TAS	126225	1	5	
2-8	C	D-PCB-BAS	126226	1	5	
1-9 2-9	C	D-Sensor	126227	2	4	(PT4. PT5)
1-10	C	D-PF Sensor	126228	1	4	(D-SN)
1-11	C	D-Fan Motor	126229	1	4	
1-12 2-10	C	D-Motor AS	126230	2	4	
1-13	C	D-Solenoid	126231	1	4	
3-21	B	DUP PWB	126232	1	5	
1-14	C	D-Roller AS (T)	126233	3	4	D-RT1, DRT2, DRT3
2-11	C	D-Roller AS (C)	126234	2	4	D-RC1, D-RC2
2-12	C	D-Roller AS (B)	126235	2	4	D-RB1, DR-B2
2-13	C	D-Regist Roller AS (D-RR)	126236	1	4	D-RR
1-17	C	D-Stop Ring	126237	?	4	(100Pices/Set)
3-22	D	D-LF-Side Cover-2 (L)	126238	1	4	
4-71	B	D-MCTL PWP	126209	1	5	
4-8	D	Top Cover-2	126205	1	4	
4-17	D	Paper Exit Unit Cover-2	126206	1	4	

SPARE PARTS LIST for SL1D COLOR LASER PRINTER

1. Replaceable Unit Parts (Model:SL1D)

ILLUST. Number	CLASS	Name of Parts	Hitachi Parts Code	Q'ty/Unit	Lead Time	Remarks
4-21	D	Base Cover (R)	126207	1	4	
4-22	D	Base Cover (L)	126208	1	4	
1-15 2-15	C	Interlock Switch	123817	5	4	D-SW1~D-SW5

ID SPARE PARTS AND CONSUMABLES LIST

4/9/99

D-00511

Spare Parts

Item #	Illustration	Hitachi Part Code	QMS Part Number	Part Name	Class	MTBF	HS Number	HS Description	Country of Origin	Qty./Unit	Lead Time (Months)	Minimum Order Qty.	SL1	SLID
1		126107	825126107	Top Cover	D	5,000,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	5	0	-
2		126108	825126108	Side Cover (R)	D	5,000,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	10	0	-
3		126109	825126109	Side Cover (L)	D	5,000,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	10	0	-
4		126110	825126110	Upper Side Cover	D	5,000,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	10	0	-
5		126111	825126111	Panel Button	D	2,000,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	20	0	0
6		126112	825126112	Panel P.W.B	B	150,000	8473.30.5000	Case for PWB for assy. In SL-1 printer	Made in Japan	1	5	5	0	0
7		126113	825126113	Front Cover Unit	C	400,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	5	0	-
8		126114	825126114	Front Cover	D	5,000,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	10	0	-
9		126115	825126115	Paper Exit Unit	C	150,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	5	0	-
10		126116	825126116	Paper Exit Unit Cover	D	5,000,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	10	0	-
11		126117	825126117	Paper Exit Front Cover	D	5,000,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	10	0	-
12		126178	825126178	Paper Exit Roller	C	900,000	8473.30.5000	Roller for assy. in SL-1 printer	Made in Japan	1	4	10	0	0
		2/2298: part changed per ECR QMS-002 - old part # 126118							Made in Japan					
13		*123842	825123842	Discharging Brush	B	800,000	9603.50.000	Brush for incorp. Into printer	Made in Japan	1	4	30	0	0
14		126120	825126120	Base Cover (R)	D	5,000,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	10	0	-
15		126121	825126121	Base Cover (L)	D	5,000,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	10	0	-
16		126122	825126122	Rear Cover	D	5,000,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	20	0	-
17		126123	825126123	Rear Cover (U)	D	5,000,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	10	0	-
18		126124	825126124	Rear Cover (L)	D	5,000,000	8473.30.5000	Plastic for assy. In SL-1 printer	Made in Japan	1	4	10	0	-
19		126125	825126125	Waste Toner Feeder (U	C	900,000	8473.30.5000	Spiral Roller for assy. SL-1 printer	Made in Japan	1	4	10	0	0
20		126126	825126126	Fusing Unit (US)	A	Every60K Pages	8473.30.3000	Image assy. W/fuser&heating element	Made in Japan	1		5	0	0
21		126127	825126127	Fusing Unit (EC)	A	Every60K Pages	8473.30.3000	Image assy. W/fuser&heating element	Made in Japan	1		5	0	0
22		126128	825126128	Fusing Unit (JP)	A	Every60K Pages	8473.30.3000	Image assy. W/fuser&heating element	Made in Japan	1		5	0	0
23		*123857	825123857	Fusing Heater (US)	C	1,000,000	8473.30.5000	Heater for assy. In printer	Made in Japan	1	5	5	0	0
24		*123858	825123858	Fusing Heater (EC)	C	1,000,000	8473.30.5000	Heater for assy. In printer	Made in Japan	1	5	5	0	0
25		*123856	825123856	Fusing Heater (JP)	C	1,000,000	8473.30.5000	Heater for assy. In printer	Made in Japan	1	5	5	0	0
26		*123828	825123828	Fusing Roller	C	600,000	8473.30.5000	Roller for assy. in SL-1 printer	Made in Japan	1	4	5	0	0
27		~~123832~~	~~825123832~~	Back-Up Roller	C	600,000	8473.30.5000	Roller for assy. in SL-1 printer	Made in Japan	1	4	5		
		10/9/97: no longer common with SL-Sigma - new part # 126133												
28		126133	825126133	Back-Up Roller	C	600,000	8473.30.5000	Roller for assy. in SL-1 printer	Made in Japan	1	4	5	0	0
		10/9/97: new part unique to SL-1 - replaced part # 123832												
29		~~126134~~	~~825126134~~	Thermistor Assy.	C	1,200,000	9031.49.0080	Heat sensor	Made in Japan	1	4	5		
		2/24/98: part deleted												
30		126182	825126182	Transfer Unit	C	250,000	8473.30.5000	Roller/discharger for SL-1 printer	Made in Japan	1	4	5	0	0
		6/11/98: part changed per ECR QMS-006 - old part # 126135							Made in Japan					
31		126137	825126137	Transfer Roller	A	Every120K Pages	8473.30.5000	Roller for assy. in SL-1 printer	Made in Japan	1		5	0	0
32		126181	825126181	Paper Discharger	A	Every120K Pages	8473.30.5000	Charger/discharger unit for printer	Made in Japan	1		10	0	0
		6/11/98: part changed per ECR QMS-005 - old part # 126138							Made in Japan					
33		126139	825126139	Optical Unit	C	125,000	8473.30.5000	Unit for assy. In SL-1 printer	Made in Japan	1	5	5	0	0
34		~~123875~~	~~825123875~~	Drum Cleaner	A	Every120K Pages	9603.50.0000	Brush for incorp. Into printer	Made in Japan	1	4	5		
		10/9/97: no longer common with SL-Sigma - new part # 126140												
35		126140	825126140	Drum Cleaner	A	Every120K Pages	9603.50.0000	Brush for incorp. Into printer	Made in Japan	1	4	5	0	0
		10/9/97: new part unique to SL-1 - replaced part # 123875												
36		126141	825126141	Transfer Drum	B	850,000	8473.30.3000	Laser imaging assy. For printer	Made in Japan	1	4	5	0	0
37		126142	825126142	Paper Feeding Roller	B	200,000	8473.30.5000	Roller for assy. in SL-1 printer	Made in Japan	1	4	10	0	0
38		~~123825~~	~~825123825~~	Separator Pad	B	200,000	8473.30.5000	Roller for assy. in SL-1 printer	Made in Japan	1	4	20		
		10/9/97: no longer common with SL-Sigma - new part # 126176												
39		126176	825126176	Separator Pad	B	200,000	8473.30.5000	Roller for assy. in SL-1 printer	Made in Japan	1	4	20	0	0
		10/9/97: new part unique to SL-1 - replaced part # 123825												
40		126144	825126144	Erase Lamp	B	500,000	8541.40.2000	Light emitting diode	Made in Japan	1	4	10	0	0
41		126145	825126145	Oil Sensor	C	700,000	9026.10.2080	Electrical, senses oil level	Made in Japan	1	4	5	0	0
42		126146	825126146	Power Supply Unit (EC	B	77,000	8504.40.6007	For between 50W and 100W	Made in Thailan	1	5	5	0	0
43		126064	825126064	Power Supply Unit (US	B	77,000	8504.40.6007	For between 50W and 100W	Made in Thailan	1	5	5	0	0
		6/11/98: part changed per ECR QMS-009 - old part # 126147							Made in Japan					
44		126148	825126148	Power Cord (US)	D	5,000,000	8473.30.5000	Cord for use with SL-1 printer	Made in Japan	1	4	10	0	0
45		126149	825126149	Power Cord (JP)	D	5,000,000	8473.30.5000	Cord for use with SL-1 printer	Made in Japan	1	4	5	0	0
46		126150	825126150	Fuser Connector	C	4,500,000	8473.30.5000	Connector for SL-1 Printer	Made in Japan	1	4	10	0	0
47		126152	825126152	Paper Feeding Clutch	C	500,000	8473.30.5000	Clutch for SL-1 Printer	Made in Japan	1	4	10	0	0
48		126153	825126153	Registration Clutch	C	500,000	8473.30.5000	Clutch for SL-1 Printer	Made in Japan	1	4	10	0	0
49		126154	825126154	Fuser Clutch	C	500,000	8473.30.5000	Clutch for SL-1 Printer	Made in Japan	1	4	10	0	0
50		126155	825126155	Developer Clutch	C	500,000	8473.30.5000	Clutch for SL-1 Printer	Made in Japan	5	4	10	0	0
			~~825126156~~	Cleaner Clutch was deleted, it is common with Dev. Clutch										
51		126157	825126157	Transfer Solenoid	C	500,000	8473.30.5000	Solenoid for SL-1 Printer	Made in Japan	1	4	10	0	0
52		126158	825126158	Drum Cleaner Solenoid	C	500,000	8473.30.5000	Solenoid for SL-1 Printer	Made in Japan	1	4	10	0	0
53		126159	825126159	Main Motor	C	140,000	8501.31.2000	38W DC Motor	Made in Japan	1	5	5	0	0
54		126160	825126160	Main Gear Unit	C	470,000	8473.30.5000	Mechanical gear for printer	Made in Japan	1	4	5	0	0
55		126161	825126161	Developer Drive Motor	C	140,000	8501.31.2000	38W DC Motor	Made in Japan	1	5	5	0	0
56		126162	825126162	Developer Drive Unit	C	310,000	8473.30.5000	Unit for assy. In SL-1 printer	Made in Japan	1	4	5	0	0
57		126163	825126163	Cooling Fan	C	700,000	8414.59.6060	Centrifugal fan for printer	Made in Japan	3	4	10	0	0
58		126164	825126164	Ozone Filter	A	Every 1 Year	8421.39.8015	Filters ozone from air/for printer	Made in Japan	1		10	0	0
59		*123817	825123817	Interlock Switch	C	2,000,000	8473.30.5000	Micro switch for printer door	Made in Japan	3	4	20	0	0
		126166	825126166	Paper Size Sensor	C	580,000	8473.30.5000	[illegible]or for assy. SL-1 printer	Made in Japan	1	4	10	0	0
		126167	825126167	Paper Sensor	C	2,000,000	8473.30.5000	[illegible]or for assy. SL-1 printer	Made in Japan	7	4	20	0	0

62		126168	825126168	Belt Sensor	C	2,000,000	8473.30.5000	Sensor for assy. SL-1 printer	Made in Japan	2	4	20	O	O
63		126169	825126169	Toner Sensor Assy.	C	1,000,000	8473.30.5000	Sensor for assy. SL-1 printer	Made in Japan	1	4	10	O	O
64		126170	825126170	OHP Sensor	C	2,000,000	8473.30.5000	Transparency sensor for printer	Made in Japan	1	4	20	O	O
65		126179	825126179	MCTL PWB(3)	B	90,000	8473.30.1000	Printed circuit board for printer	Made in Japan	1	5	5	O	-
		4/28/98: new part number - replaced part # 126171												
66		126172	825126172	IOD1 PWB	B	130,000	8473.30.1000	Printed circuit board for printer	Made in Japan	1	5	5	O	O
67		126173	825126173	IOD2 PWB	B	170,000	8473.30.1000	Printed circuit board for printer	Made in Japan	1	5	5	O	O
68	*	126174	825126174	High Voltage Unit	B	74,000	8473.30.5000	Switching pwr supply for printer	Made in Japan	1	5	5	O	O
69		126175	825126175	Paper Exit Filter	-				Made in Japan	1	4	5	O	O
70		126180	825126180	BC Terminal	-		8536.90.4000	600V Terminal	Made in Japan	1	4	10	O	O
71		126185	825126185	Front stay R (Door Hir	-		8473.30.5000	For assy. In printer	Made in Japan	1	4	20	O	O
72		126186	825126186	Front stay L (Door Hin	-		8473.30.5000	For assy. In printer	Made in Japan	1	4	20	O	O
73		126188	825126188	Waste Toner Feeder (L	-				Made in Japan	1	4	5	O	O
74		126189	825126189	F Pressure Release Pie	-		8473.30.5000	For assy. In printer	Made in Japan	1	4	20	O	O
75		126190	825126190	TR Regist Roller 1	-		8473.30.5000	For assy. In printer	Made in Japan	1	4	10	O	O
76		126403	825126403	Cleaner Cover	-		8473.30.5000	For assy. In printer	Made in Japan	1	4	20	O	O
77		126191	825126191	LF Connector Cover	-		8473.30.5000	For assy. In printer	Made in Japan	1	4	20	O	O
78		126192	825126192	Front Lock Cover	-		8473.30.5000	For assy. In printer	Made in Japan	1	4	20	O	O
79		126193	825126193	Holder Pin (A) Assy.	-		8473.30.5000	For assy. In printer	Made in Japan	1	4	10	O	O
80		126199	825126199	MD Gear Assy	-		8483.40.9000	Gear Assy.	Made in Japan	1	4	5	O	O
81		126200	825126200	FP Casette Guide (L)	-		8473.30.5000	For assy. In printer	Made in Japan	1	4	20	O	O
82		126201	825126201	FP Casette Guide (R)	-		8473.30.5000	For assy. In printer	Made in Japan	1	4	20	O	O
83		126202	825126202	FP Regist D Assy	-		8483.40.9000	Gear Assy.	Made in Japan	1 set	4	20	O	O
84		126203	825126203	GHP Harness	-					1set	4	10	O	O
84		126204	825126204	SL1 Harness D	-					1set	4	10	O	O

Note : Asterisk(*)means the common part with SL-SIGMA

SL-1D Unique Parts

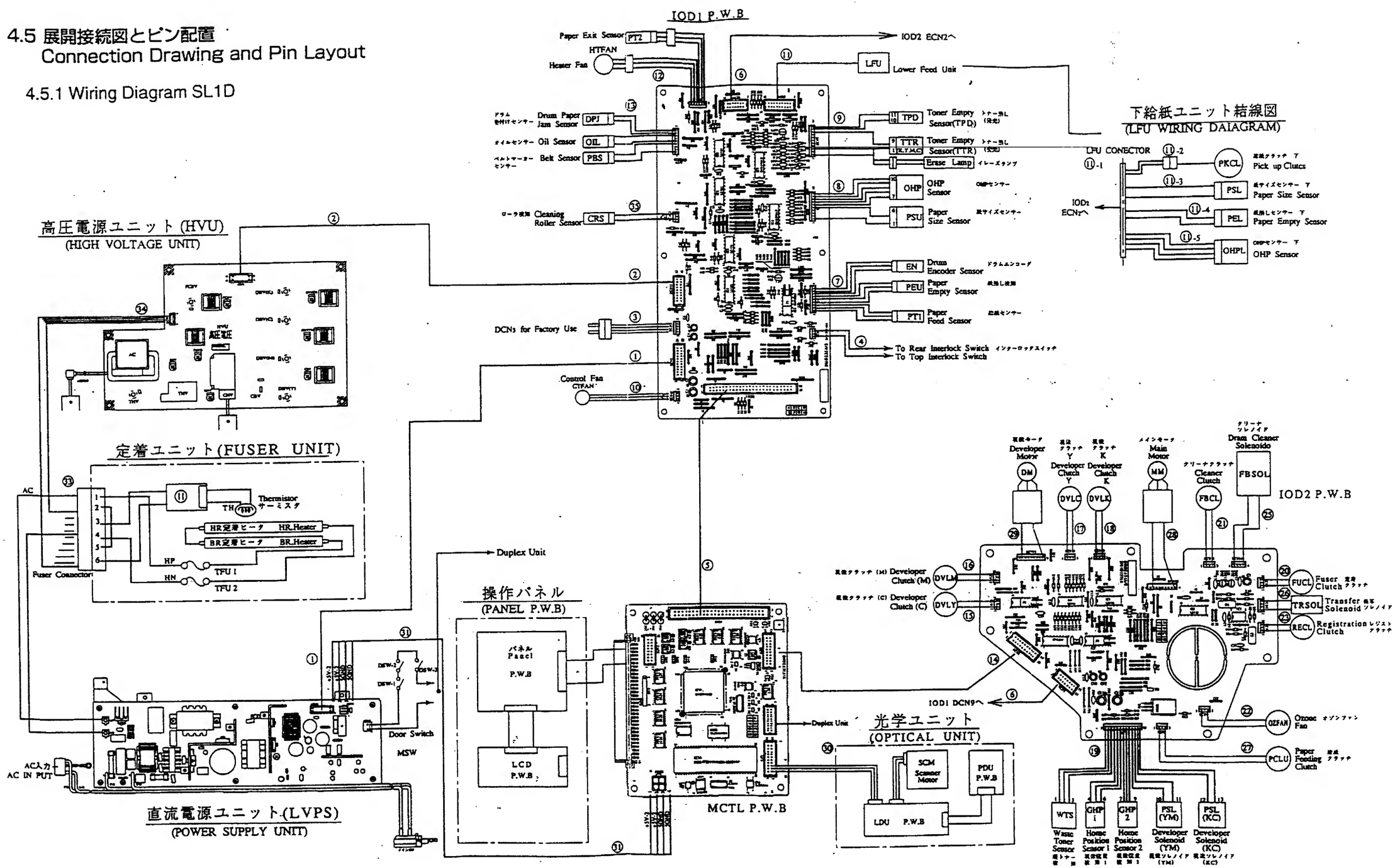
Item #	Illustration	Hitachi Part Code	QMS Part Number	Part Name	Class	MTBF	HS Number	HS Description	Country of Origin	Qty./Unit	Lead Time (Months)	Minimum Order Qty.	SL1	SL1D
1		126205		Top Cover-2	D	5,000,000				1	4	5	-	O
2		126206		Paper Exit Unit Cover-2	D	5,000,000				1	4	10	-	O
3		126207		Base Cover (R)-2	D	5,000,000				1	4	10	-	O
4		126208		Base Cover (L)-2	D	5,000,000				1	4	10	-	O
5		126209		E-MCTL PWP	B	90,000				1	5	5	-	O
6		126210		D-Main Frame	D	5,000,000				1	4	10	-	O
7		126211		D-Main Frame Bottom	D	5,000,000				1	4	10	-	O
8		126212		D-Center Cover	D	5,000,000				1	4	10	-	O
9		126213		D-Top Cover	D	5,000,000				1	4	10	-	O
10		126214		D-Top Cover R	D	5,000,000				1	4	10	-	O
11		126215		D-Top Cover L	D	5,000,000				1	4	10	-	O
12		126216		D-Bottom Cover M	D	5,000,000				1	4	10	-	O
13		126217		D-Bottom Cover R	D	5,000,000				1	4	10	-	O
14		126218		D-Bottom Cover L	D	5,000,000				1	4	10	-	O
15		126219		D-PG-LFU	C	1,500,000				1	4	10	-	O
16		126220		D-SW Cover R	D	5,000,000				1	4	10	-	O
17		126221		D-SW Cover L	D	5,000,000				1	4	10	-	O
18		126222		D-Motor Cover	D	5,000,000				1	4	10	-	O
19		126223		D-Shutter AS	C	5,000,000				1	4	10	-	O
20		126224		D-Roller (100 pieces)	C	1,000,000				28	4	1	-	O
21		126225		D-PCB-T AS	C	500,000				1	5	5	-	O
22		126226		D-PCB-B AS	C	500,000				1	5	5	-	O
23		126227		D-P Sensor	C	2,000,000				2	4	20	-	O
24		126228		D-PF Sensor	C	2,000,000				1	4	20	-	O
25		126229		D-Fan Motor	C	700,000				1	4	10	-	O
26		126230		D-Motor AS	C	140,000				2	4	10	-	O
27		126231		D-Solenoid	C	500,000				1	4	10	-	O
28		126232		DUP PWP	B	250,000				1	5	5	-	O
29		126233		D-Roller AS(T)	C	600,000				3	4	10	-	O
30		126234		D-Roller AS(C)	C	600,000				2	4	10	-	O
31		126235		D-Roller AS(B)	C	600,000				2	4	10	-	O
32		126236		D-Regist Roller AS	C	600,000				2	4	10	-	O
33		126237		D-Stop Ring (100 piec	C	1,000,000				15	4	1	-	O
34		126238		LF-Side Cover-2(L)	D	5,000,000				1	4	10	-	O

Additionally Quoted Parts

Item #	Illustration	Hitachi Part Code	QMS Part Number	Part Name	Class	MTBF	HS Number	HS Description	Country of Origin	Qty./Unit	Lead Time (Months)	Minimum Order Qty.
1		N/A	Fus Contc Felt SL	Fuser Contact Felt			8473.30.5000	For assy. In printer			4	100
2		N/A	Backup Rol Clean	Back-Up Roller Cleaner							4	100
3		N/A		Starter Kit					Made in Japan		3	20
4		N/A	Set	Packaging : Engine			4819.10.0040	Corrugated paper carton, box or case	Made in Japan		2	
5		N/A	SL1 LFU Pkg	Packaging : Lower Feeder			4819.10.0040	Corrugated paper carton, box or case	Made in Japan		3	25
6		N/A	SL1 Lgl Cass Pkg	Packaging : Legal Cassette			4819.10.0040	Corrugated paper carton, box or case	Made in Japan		3	25
7		N/A	SL1 Toner Pkg	Packaging : Toner Cartridge			4819.10.0040	Corrugated paper carton, box or case	Made in Japan		3	100
8		N/A	SL1 WTP Pkg	Packaging : Waste Toner Pack			4819.10.0040	Corrugated paper carton, box or case	Made in Japan		3	100
9		N/A	SL1 OPC Pkg	Packaging : Belt CG			4819.10.0040	Corrugated paper carton, box or case	Made in Japan		3	50
10		N/A	SL1 Fuser/Oil Pkg	Packaging : Fuser Cleaner/Oil			4819.10.0040	Corrugated paper carton, box or case	Made in Japan		3	100
11		N/A	1730675-901	Engine Packaging Subcomponent : Outer Box			4819.10.0040	Corrugated paper carton, box or case	Made in Japan		3	20
12		N/A	1730675-902	Engine Packaging Subcomponent : Base/Upper Pac			3923.90.0080	Other plastic packaging	Made in Japan		3	20
13		N/A	1730675-903	Engine Packaging Subcomponent : Starter Kit Pack			3923.90.0080	Other plastic packaging	Made in Japan		3	20
14		N/A	1730675-904	Engine Packaging Subcomponent : Joint (10 pcs. pe			3923.90.0080	Other plastic packaging	Made in Japan	10	3	50
15		N/A	FU Pipette	FU Pipette					Made in Japan	1	3	100
16		SL-1 ROM	SL-1 ROM	Mask ROM					Made in Japan			50
17		N/A		Engine Packaging Subcomponent : Base/Upper Cus			3923.90.0080	Other plastic packaging	Made in Japan		3	20
18		N/A	BR Felt Assy.	BR Felt Assy.			873.30.5000	For assy. In printer	Made in Japan	1	4	10

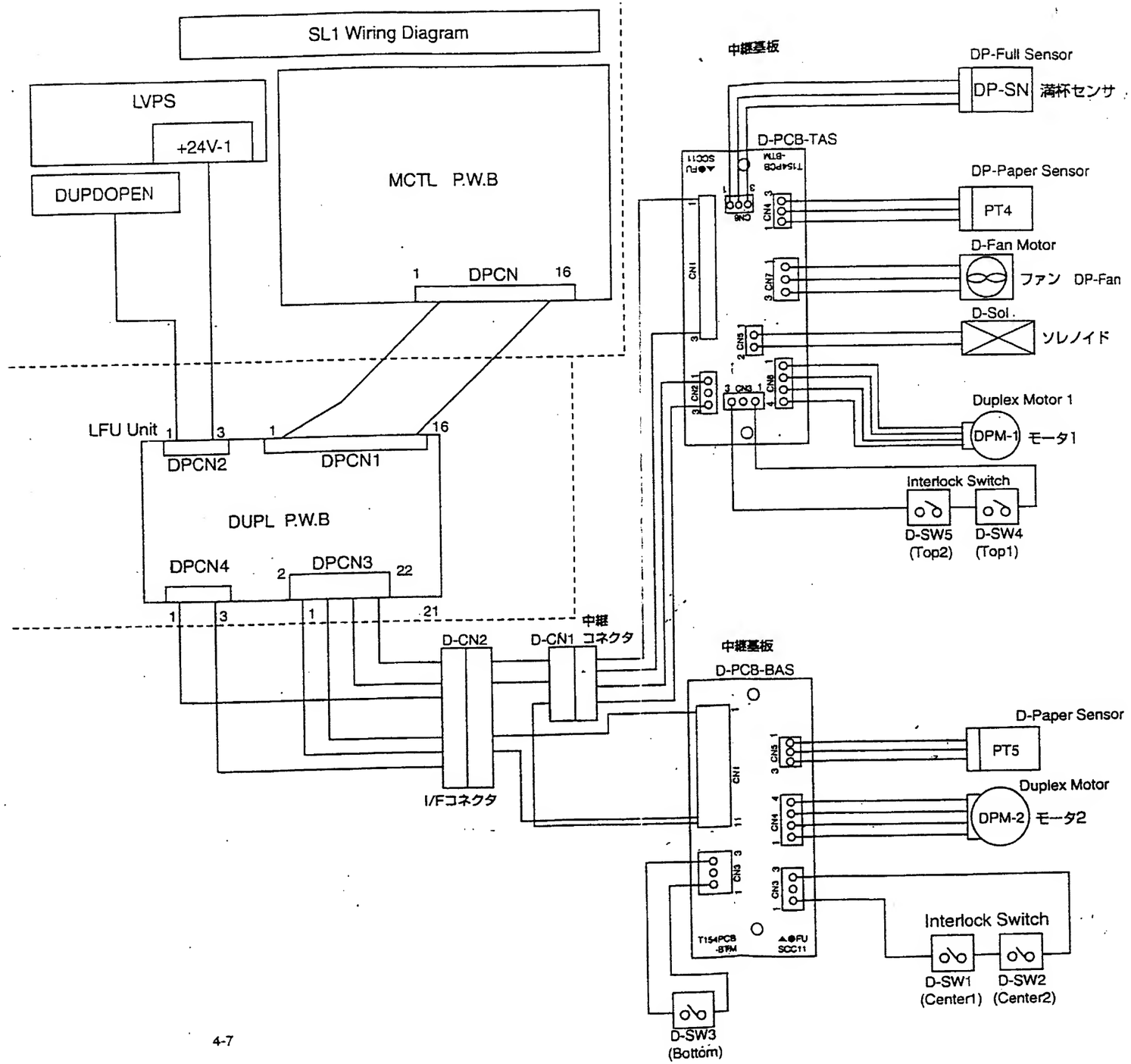
4.5 展開接続図とピン配置
Connection Drawing and Pin Layout

4.5.1 Wiring Diagram SL1D



Wiring Diagram SL1D

4.5.2 Wiring Diagram of Duplex Unit



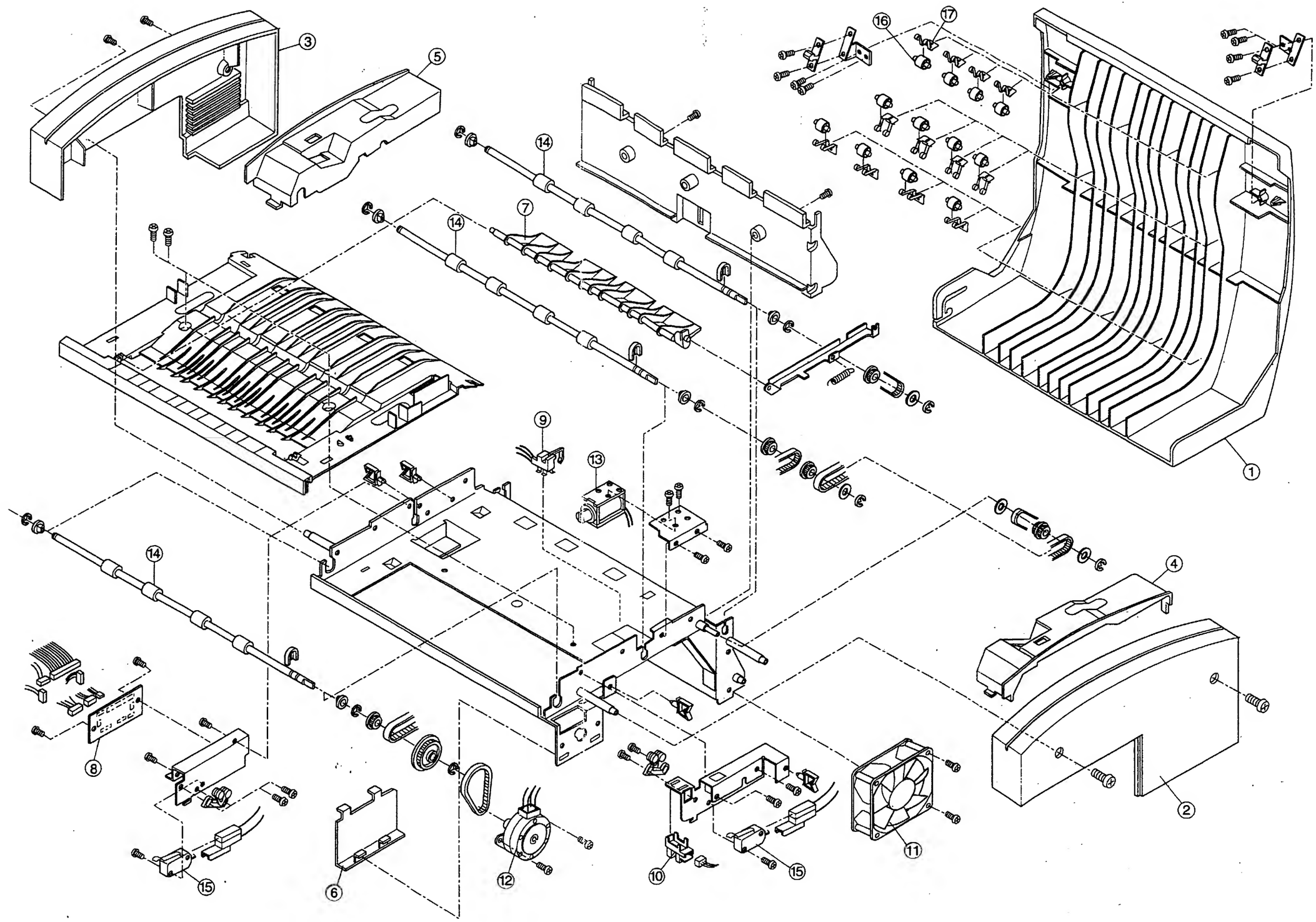


Fig 9-1 D-トップカバーユニット
D-Top Cover Unit

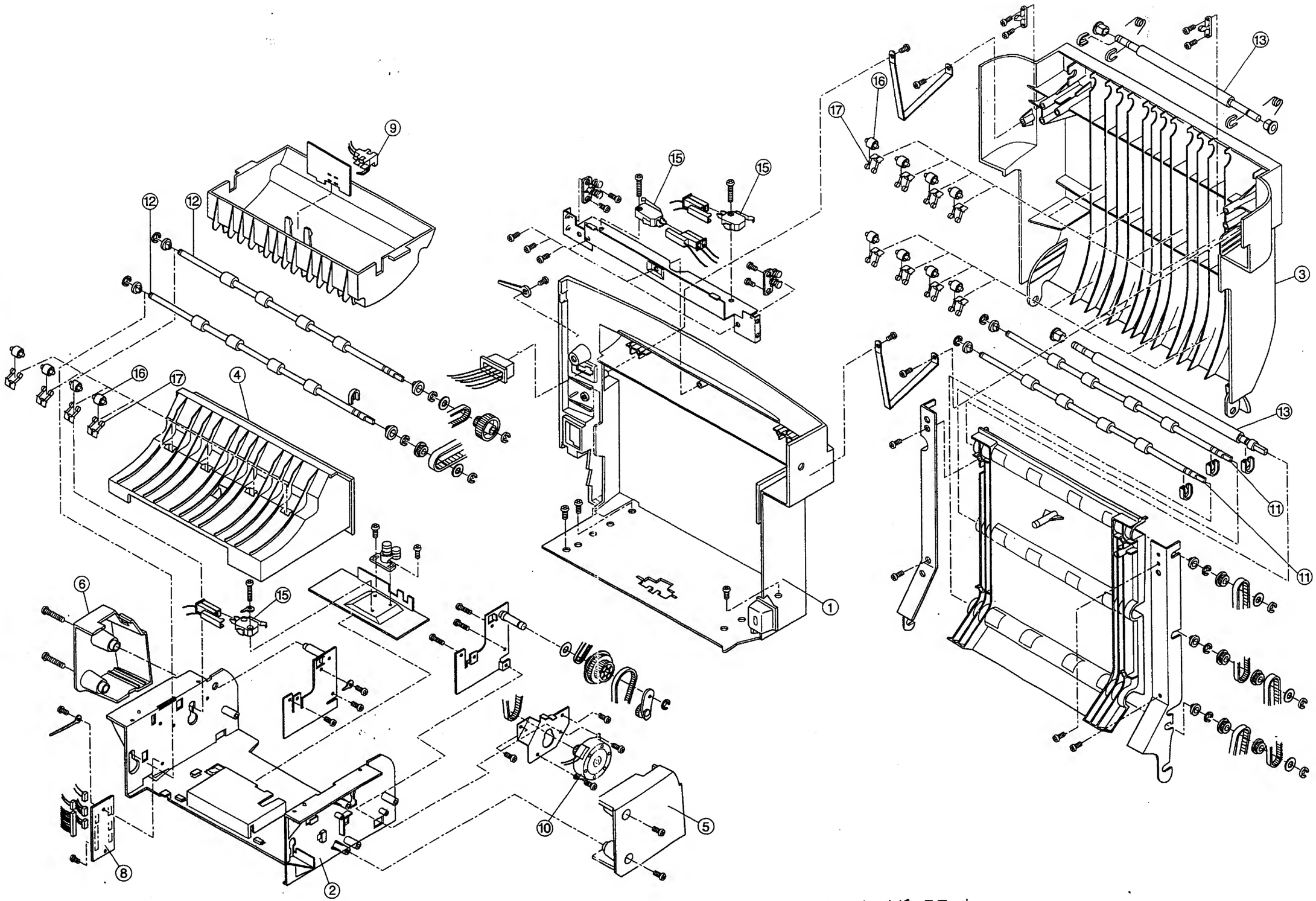


Fig 9-2 D-センターカバーユニット
D-Center Cover Unit

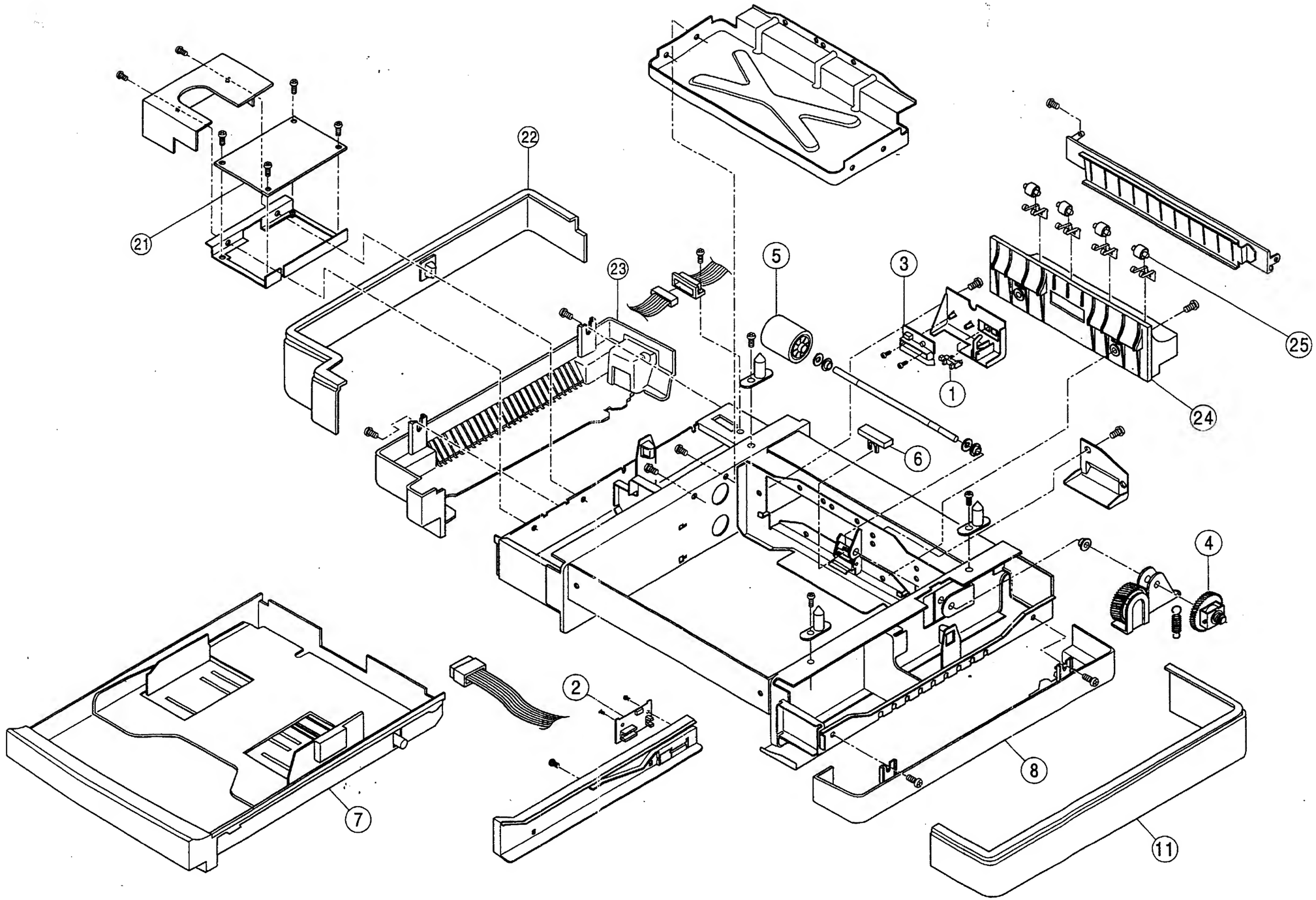


Fig 9-3 ロアフィーダーユニット
LFU

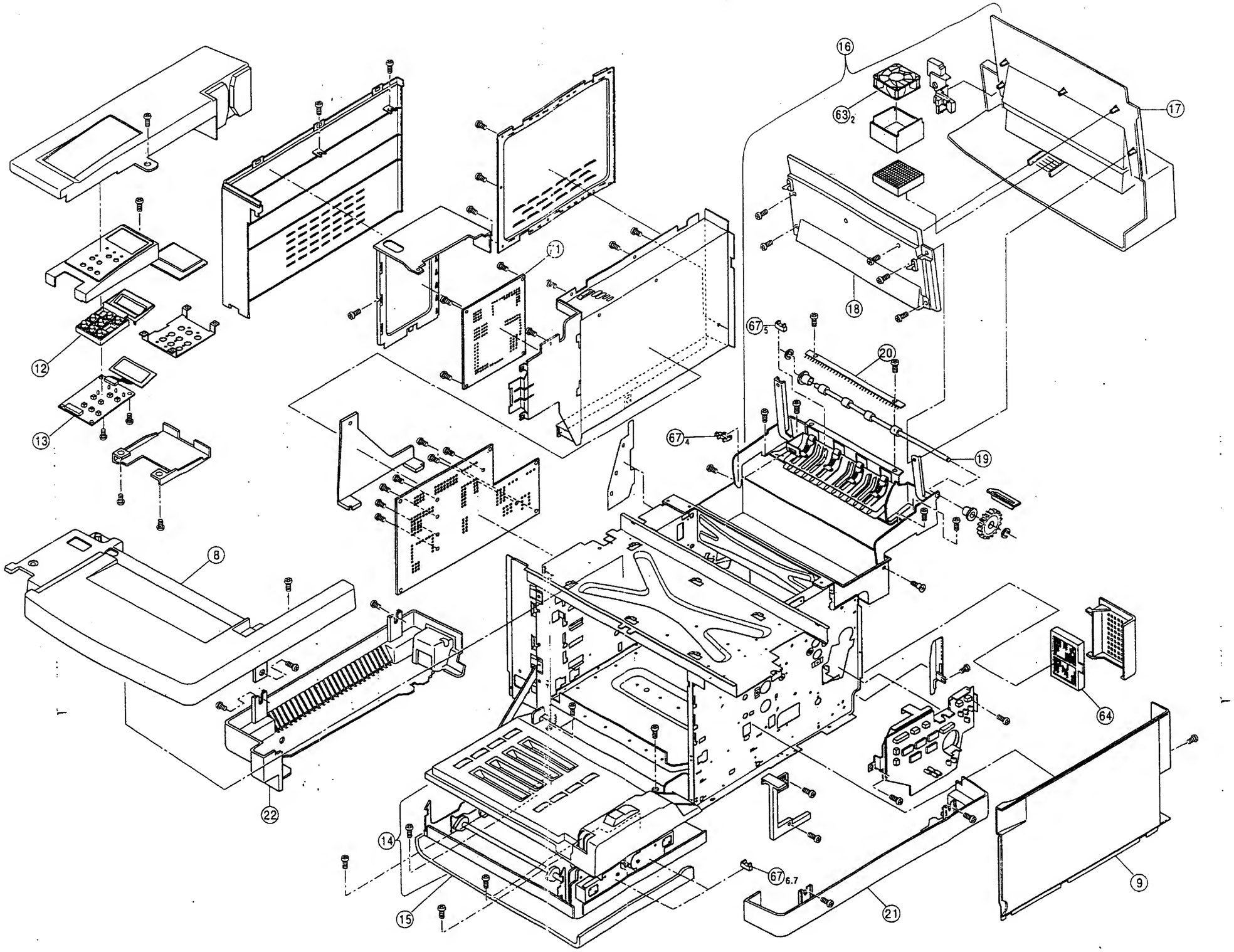


Fig 9-4　プリンタ本体
Printer Body